SCIENCE AND INDUSTRY

MANUFACTURERS RECORD

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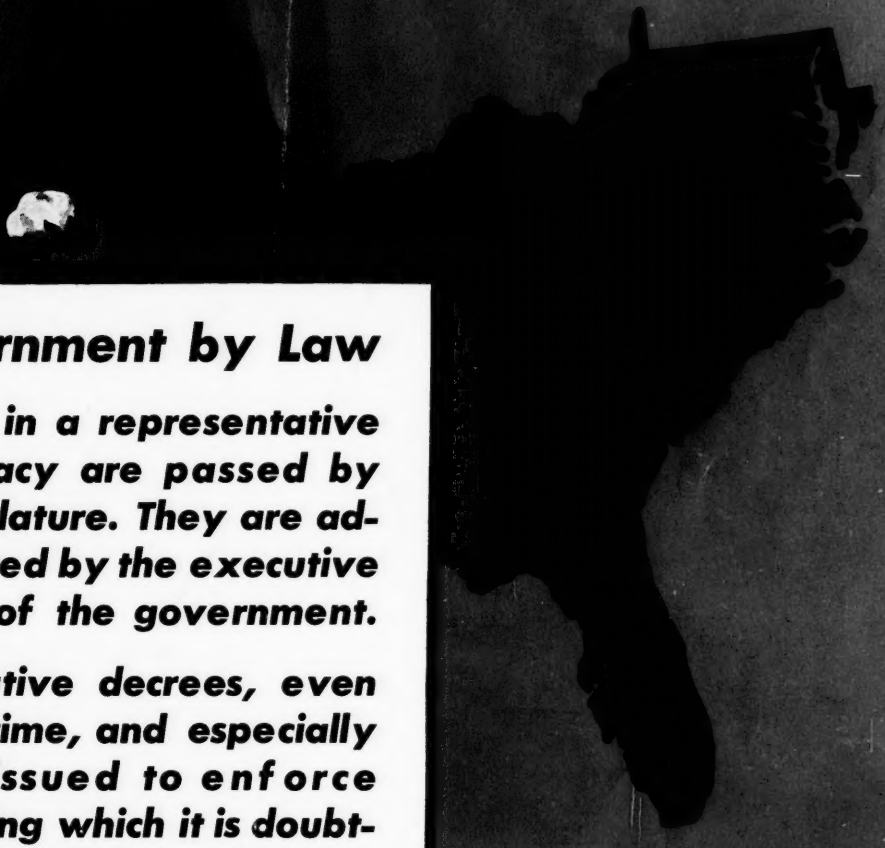


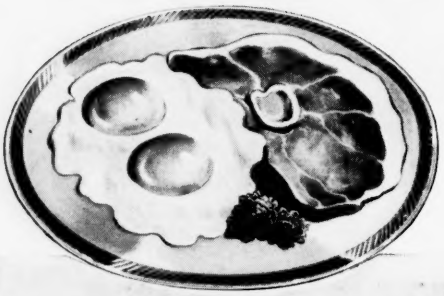
Government by Law

Laws in a representative democracy are passed by its legislature. They are administered by the executive branch of the government.

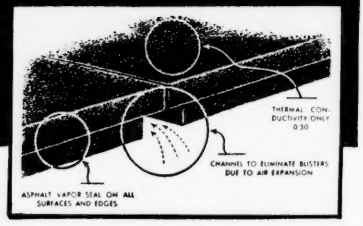
Executive decrees, even in war-time, and especially when issued to enforce something which it is doubtful the legislature will pass, smack of dictatorship.

We are fighting for government by law.

UARY, 1943



THEY BELONG TOGETHER —LIKE HAM AND EGGS


THERMAL CONDUCTIVITY ONLY 0.30
CHANNEL TO ELIMINATE BLISTERS DUE TO AIR EXPANSION
ASPHALT VAPOR SEAL ON ALL SURFACES AND EDGES

CELOTEX BUILT-UP ROOFING and CELOTEX VAPOR-SEAL ROOF INSULATION meet exacting needs of textile plants

CENTRALIZED responsibility avoids "buck-passing." When your roof insulation and built-up roof are both the products of the same reliable manufacturer, you avoid possibilities which make for trouble. That's why so many big plants use Celotex Vapor-seal Roof Insulation together with Celotex Built-Up Roofs.

Celotex Bonded Built-Up Roofs are available with ten, fifteen, or twenty-year bond. Celotex Vapor-seal Roof Insulation offers a thermal conductivity of 0.30, offset edges all around each board that build channels which eliminate trapped air, reduce possibilities of roof buckling and blistering.

Write for complete information, specifications, and samples—or consult your roofing contractor.

CELOTEX
REG. U. S. PAT. OFF.
BUILDING PRODUCTS

Vapor-Seal Roof Insulation **Bonded Built-Up Roofs**

THE CELOTEX CORPORATION • CHICAGO

THE CELOTEX CORPORATION MR 2-10-43
Chicago, Illinois

Please send complete information on Celotex Vapor-seal Roof Insulation and Built-Up Roofing.

Name .....

Address .....

City .....

County ..... *State* .....

BIG-HUSKY-ACCURATE *is not enough!*

You've got to consider the "X" factor, too!

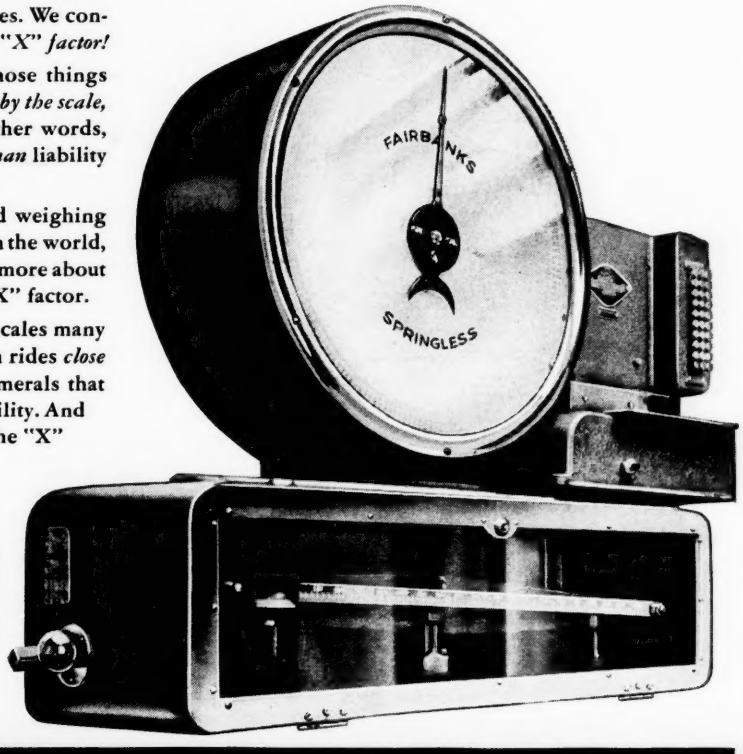
Sure, we make scales big, husky, and accurate. You've got a right to expect *that* from *any* good scale. But we at Fairbanks-Morse build something else into our weighing machines. We consider in the *design* of our scales—*the "X" factor!*

The "X" factor is composed of those things which cause inaccurate weighing, *not by the scale,* but by the men who use scales. In other words, the "X" factor in weighing is the *human* liability of inaccuracy.

Having designed and manufactured weighing equipment longer than anybody else in the world, it is only natural that we should know more about the causes of inaccuracy due to the "X" factor.

Consequently, you will find in our scales many little features, such as a pointer which rides *close* to the dial to avoid parallax, and numerals that have been selected for greatest readability. And if you want to completely eliminate the "X" factor, we'll provide a ticket printer which prints an indelible record, automatically.

If you have a weighing problem, or want to speed up your weighing operations, come where there is more experience. Ask Fairbanks, Morse & Co., 600 S. Michigan Ave., Chicago.



Fairbanks-Morse Scale Engineers, because they are industrial specialists, can be of greatest service in fitting weighing machinery into your production flow. For weighing while in motion, secrecy in weighing, or automatic operation, ask for their counsel.

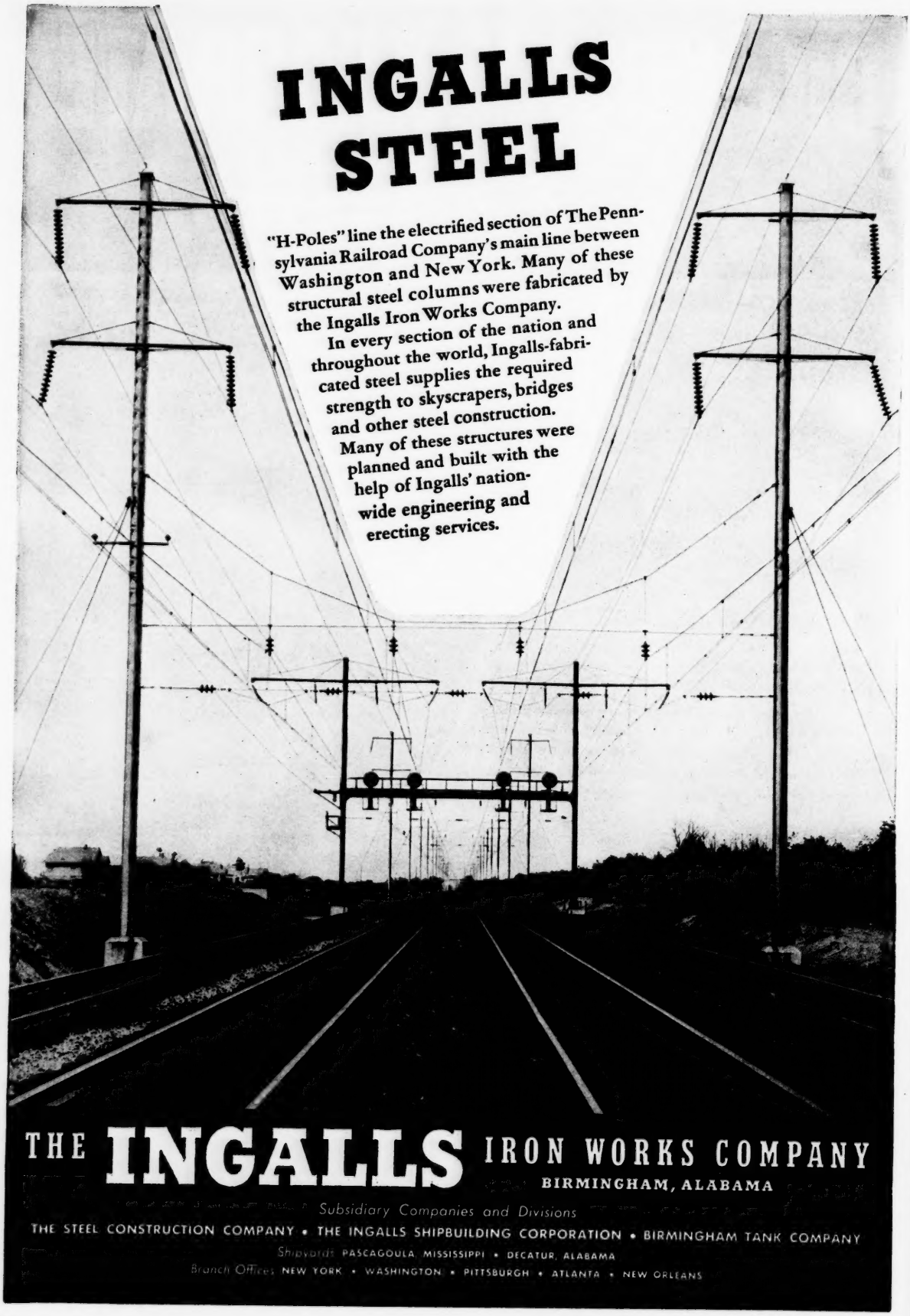
FAIRBANKS-MORSE

DIESEL ENGINES
PUMPS
ELECTRICAL MACHINERY
SCALES
MOTORS

WATER SYSTEMS
FARM EQUIPMENT
STOKERS
AIR CONDITIONERS
RAILROAD EQUIPMENT

FAIRBANKS SCALES

Scales



INGALLS STEEL

"H-Poles" line the electrified section of The Pennsylvania Railroad Company's main line between Washington and New York. Many of these structural steel columns were fabricated by the Ingalls Iron Works Company.

In every section of the nation and throughout the world, Ingalls-fabricated steel supplies the required strength to skyscrapers, bridges and other steel construction. Many of these structures were planned and built with the help of Ingalls' nation-wide engineering and erecting services.

THE INGALLS IRON WORKS COMPANY
BIRMINGHAM, ALABAMA

Subsidiary Companies and Divisions
THE STEEL CONSTRUCTION COMPANY • THE INGALLS SHIPBUILDING CORPORATION • BIRMINGHAM TANK COMPANY
Shipyards: PASCAGOULA, MISSISSIPPI • DECATUR, ALABAMA
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MANUFACTURERS RECORD

Established 1882

CONTENTS

FEBRUARY, 1943

Volume 112, Number 2

EDITORIALS

Government by Law ..... Cover
Thoughts for the Thoughtful 6
Exhausting Public Patience 21
The South and the New Deal 23

FEATURE ARTICLES

Katy's Most Prosperous Year by M. S. Sloan 24
Essential Cottonseed by A. L. Ward 26
Chemicals in War and Peace by T. G. Joslin 28
Landing Vessel Production Speeded at Charleston 30
Norepol, a New Substitute Rubber 32
Memphis Celebrates its Industrial Growth by Arthur M. Field... 34
South's Construction Contracts Rise in January by S. A. Lauver. 36
Important New Industrial Plants and Expansions in the South During January 38
War Contracts and Allocations to the Southern States 40
United States Lend-Lease 41
Airplane Engine Production 43
100 Years of Steel Service 44

DEPARTMENTS

New Methods and Equipment 46
Industrial News 46
Trade Literature 49
Index for Buyers 64
Index of Advertisers 66

MANUFACTURERS RECORD PUBLISHING CO.

Other publications: Construction (daily), Consrtuction (monthly) and Blue Book of Southern Progress.

Main Office: Candler Building, Baltimore, Md.
Phone: LExington 7065
Branch Offices: New York—393 Seventh Ave., Room 1615. Phone: Penna. 6-3515.
Chicago—28 East Jackson Blvd., Room 712. Phone: Harrison 5867.
Cleveland, O.—Caxton Building, Room 801. Phone: Main 3341.

Subscription Rates: One Year $3.00. Two Years $5.00.
Single Copies 25c, back numbers over 3 months old 50c.

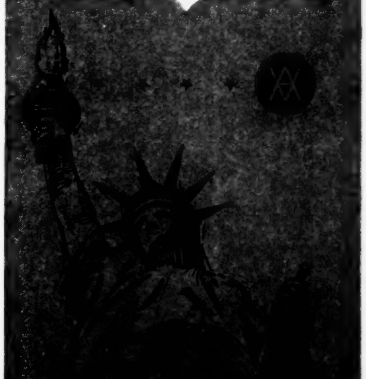
Entered as second class matter at the postoffice, Baltimore, Md., U.S.A., under act of March 3, 1879. Volume 112, Number 2 Monthly.

HELPING the Railroads and the NATION

Means of communication and modes of transportation, which abridge time and foreshorten distance, helped to build our nation, making it compact, strong, resourceful ★ Railroads have effectively served America in times of peace and war for more than a century. Throughout three generations Westinghouse Air Brakes have provided security and facility in the movement of trains for every class of service ★ Today, rail carriers are performing with distinction their Herculean role in our war for survival, to the end that all of us may quickly return to serving needs of a nation at peace.

★

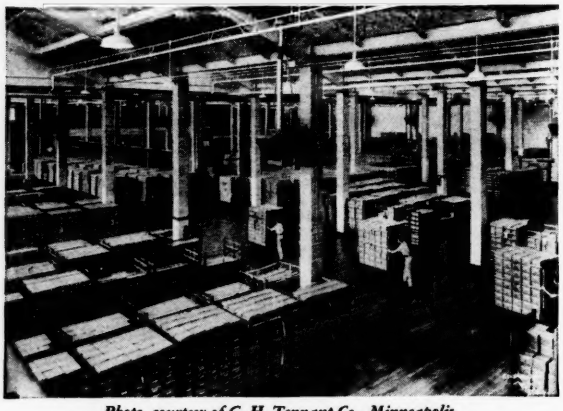
In addition to maintaining the flow of vital air brake apparatus to the railroads, we are using our unique facilities and techniques in the manufacture of large volumes of precision parts for many types of war equipment. » » » »



Westinghouse...
AIR BRAKE CO.
WILMERDING, PA

AT

National Biscuit Company, Atlanta



Photo, courtesy of G. H. Tennant Co., Minneapolis
Louis Wirsching, New York City, Architect

. . . 481,000 Feet of Spotless Maple Flooring

In its new Atlanta bakery, National Biscuit Company has assembled every aid to sanitary, uniform baking—including Maple Floors.

The bakers of "Ritz" know Hard Maple is easy to clean, because it's so compact and *smooth*. Its remarkably tight grain and tough fibre *retain* that smoothness through the years, and give it infinite capacity for taking punishment from loaded trucks and other traffic.

For employees, Maple's warm, resilient comfort retards fatigue, and its spic-and-span surface is a constant reminder of company standards of sanitation.

. . . Always, with Maple Floors, food plants foster cleanliness and better production — *decrease* upkeep, maintenance, and floor costs. *Ask your Architect.*

MAPLE FLOORING MANUFACTURERS ASSOCIATION
1797 McCormick Building, Chicago, Illinois

Floor *with*
MFMA Maple
(NORTHERN HARD)

Thoughts for the Thoughtful

The calamity of inflation has been referred to in this column before. It is a possibility that looms large on the horizon of every nation engaged in war, and has been a threat in this country for sometime past. In this connection we quote from a letter recently received from a point in northern China, where a Southern friend is now located. The temperature and climate generally of this region is approximately that of Baltimore.

"The end of August we let one of our servants go, 'the Boy' that we took and trained and he was a perfect jewel. But we simply could not afford two and the Cook was the one I needed most. We pay our cook partly in rice and partly in cash. He gets two teo and one-half of rice, (one teo equals about 10 catty, and one catty is 1½ lbs.). At present a teo of rice costs about $90.00, but it has been over $100. In addition we pay him $120 in wages, making a total of $345 a month. He can hardly live on that—he and his wife. Prices are still fantastic—sugar is $15.00 per lb.—lard $14.00—flour $5.50—milk is $8.00 per qt.—peanuts are $7.00 per catty—Irish potatoes are $1.60 per lb.—coal is $1.00 per catty; we use about $600 worth of coal a month for the kitchen alone, and have done without fire in the house for approximately two years. Fruits, vegetables, and meats are all frightfully high—a chicken costs about $100 now, while eggs are $2.00 each. Can you imagine handing about $100 every other day to the cook for street marketing—it comes to just about that for our family of three, and we live more cheaply than most families. A number of people estimate that it costs them $50.00 per day per person. I think I am managing for about $30.00 each without any frills. I bought a case of laundry soap—100 cakes—and it cost me $900; light bulbs cost $100 each; wool for knitting is $1500 per lb.; a pair of Nylon stockings cost $1800. Nothing surprises me any more."

The above letter came by airmail with stamps valued at $18.90. That is what inflation means.

The increase in the development of Southern industry is going to bring many changes in the thoughts of Southern scientists, educators and other leaders.

More and more young men and women will want to receive technical education rather than training fitting them for white collar jobs. But much more important to the South is the fact that these intelligently trained people will remain in the South. They will recognize the fact that their real opportunity lies right at home.

At a meeting of the Association of National Advertisers in New York Mr. Donald M. Nelson, chairman of the War Production Board, said:

"I see no reason why any man should assume, now, that no scope is going to be left for the free exercise of his talents; I see no reason to assume that the field is going to tighten up so much that advertising will not still have an important job to do in the distribution of goods.

"For advertising, I must repeat, is an essential part of our communications system. We dare not destroy or cripple that communications system in wartime, and we have no remotest desire to do so."

We wish some real economist would explain to us the difference between government bonds and greenbacks. They are both printed on paper. They have the promise to pay by the United States Government printed on them. They have only the credit and integrity of the government behind them. The only difference that we can see is that greenbacks bear no interest and bonds do. They will either have to be paid or repudiated some day.

Why are some of the smart boys that infest Washington called "national planners"? Why are they not called by their real names?

As nearly as we can ascertain, the aims of planners who plan for the nation after the war include welfare for everybody, security for everybody, jobs for everybody who wants to work, adequate medical care, adequate food, adequate transportation, an enormous number of water power and reclamation projects—in fact, it seems that they were afraid they might overlook something so they played safe by trying to include everything.

One little thing they did practically overlook, however, was the question of who is to pay for these blessings. The problem is mentioned only by suggesting that if the country had a hundred billion dollars' income annually it could levy taxes on that income and pay for public works, including the "shelf" of projects. How we shall get the hundred billion dollar income is lightly dismissed by suggesting that if we spend enough government money the rest will be easy, presumably after the manner of the cat-and-rat farm, in which the cats eat the rats, producing fur, and the rats eat the defurred cats, and all is well.

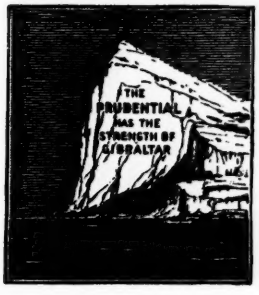
A professor at the University of Washington has invented a portable fiber-making machine which will produce insulation materials and fiberboard used in housing projects, and utilizes chips, formerly considered waste.

The machine, which is wholly mechanical, uses 100% of the wood fed to it as compared with 40% to 60% utilized in chemical processes. Such a small machine can be operated directly behind the loggers and eliminates the high transportation costs involved in bringing bulky chips to the mill.

Maybe you don't have to wait

There is such a variety of Prudential policies and premium plans that often a man who investigates is surprised to find he can afford NOW the life insurance he needs for family protection.

Ask any Prudential agent for particulars



The Prudential
Insurance Company of America
Home Office, NEWARK, N. J.

Durable CONCRETE ROADS
-a vital wartime asset

In these times it is good to know that 100,000 miles of concrete roads are on the job.

Maintenance funds go an average of THREE TIMES AS FAR on concrete as on the next most commonly used state road surface.

This saving means the conservation of millions of man-hours of road labor, and vast quantities of maintenance materials, equipment and transportation facilities needed for war.

Concrete roads in general will carry the *heaviest wartime traffic, with the least upkeep cost and the least wear and tear.*

Concrete is helping economically to build needed strength and stamina into main-traveled military and access roads—with little or no steel, and generally with minimum use of transportation facilities for construction.

Our technical staff is ready to assist designers and builders on paving and all types of war construction. We ask that you let us supply any data that will expedite your job or help get maximum service from concrete.

PORTLAND CEMENT ASSOCIATION
Dept. A2-21 , 33 W. Grand Ave., Chicago, Ill.

A national organization to improve and extend the uses of concrete . . . through scientific research and engineering field work

★ ***BUY MORE WAR SAVINGS BONDS*** ★

The headlight of a troop train stabs through the blackness of a southern night . . . white flags flying.

A fast freight snakes its way through the southern foothills . . . white flags flying.

White flags of surrender? Not these flags! These white flags mark an "extra" train. These white flags mean troops are moving, war freight is rolling. These white flags mean *fight!*

Today, the Southern Railway System is flying more white flags than ever before. Extra trains by the hundreds are rolling along to help move men, supplies, materials of war.

Tomorrow, when free men in a free world have won their Victory, these "extra" trains of the Southern will carry a different kind of freight . . . rich foodstuffs and great crops from the Southland's fertile farms and fields . . . cheaper, better products of manufacture from the *new* South's modern industries.

This is the vision of the men and women of the Southern . . . who see in the white flags flying today the promise of a better tomorrow.

Ernest E. Norris
President

SOUTHERN *RAILWAY SYSTEM*

The Southern Serves the South

Recently the Government contracted for a Lock Joint pipe line to serve the important base at [redacted]. The purpose of this line was to deliver [redacted] gallons of water daily. Decision narrowed down to a choice between pipe 'A' and pipe 'B', both of which were Lock Joint pipes. Pipe 'A,' with a greater diameter, was chosen because it was found that by tailor-making the pipe to fit the job it could be built using less of those materials so essential to the war effort. Furthermore, this saving in materials permitted the larger pipe line to be built at virtually no increase in price over the smaller pipe line, and with the assurance of a very considerable saving in operating costs. On any project, the primary purpose of a pipe line is to transport water, and the more efficiently and economically this water is transported, the more apparent becomes the value of the pipe line. It's no secret that Lock Joint pipe is your best investment, today. On your next project—let us help you get the maximum pipe line efficiency at a minimum of expense.

LOCK JOI[redacted]

[redacted]RESSURE PIPE

SCOPE OF SERVICES

Lock Joint Pipe Company specializes in the manufacture and installation of Reinforced Concrete Pressure Pipe for Water Supply Mains as well as Concrete Pipe of all types for Sanitary Sewers, Storm Drains, Culverts and Subaqueous lines.

LOCK JOINT PIPE COMPANY
Established 1905
AMPERE • NEW JERSEY
Denver, Colo. • Chicago, Ill.
Kenilworth, N. J. • Kansas City, Mo.
Rock Island, Ill. • White Plains, N. Y.
Valley Park, Mo. • Cleveland, Ohio
Hartford, Conn. • Navarre, Ohio

TEAMED *for the Big Push!*

To put fighting equipment in more places, in greater volume, and do it under more trying circumstances than ever before in the history of the world — is the job of American industry and transportation. Both are teamed for the United Nations' offensive strategy of global warfare.

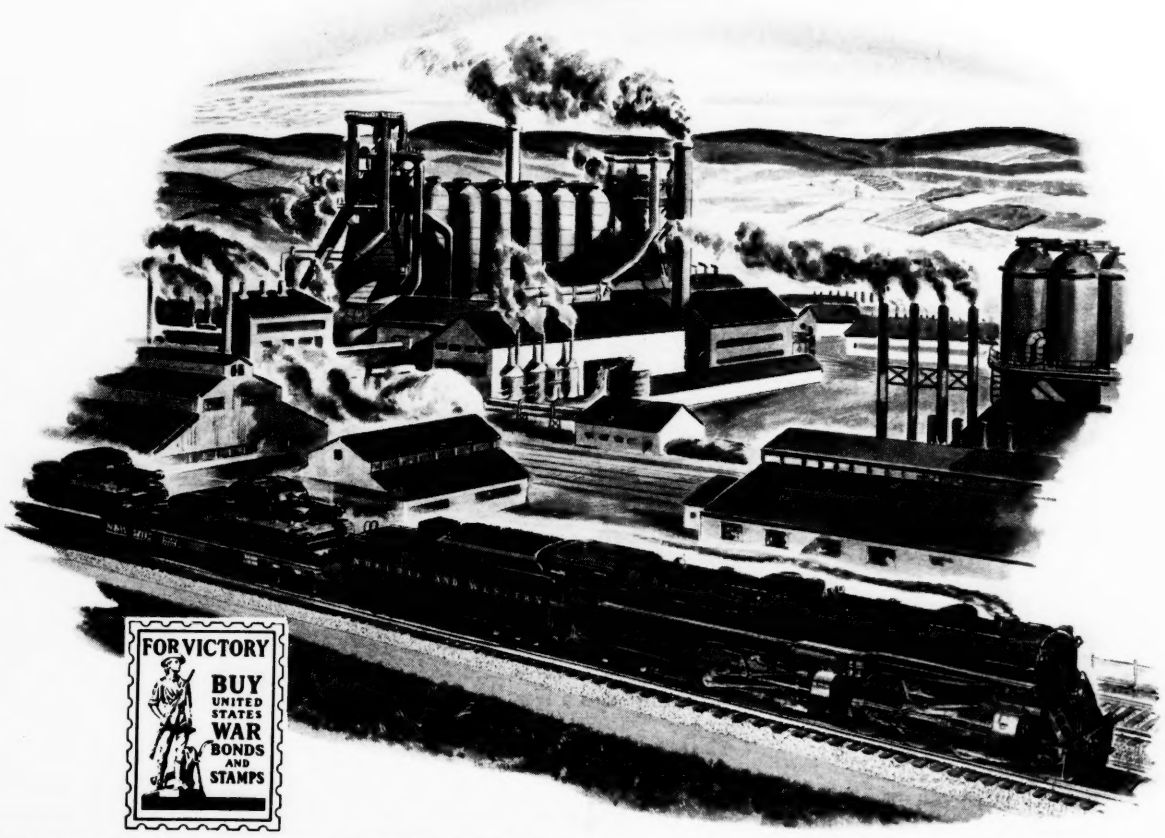
Industries have quickly converted from a peacetime to a wartime economy. Guns, planes, bombs, tanks, ships and other implements of war are flowing off production lines which were turning out lipstick-containers, bathtubs, electric refrigerators, and other peacetime products only a few months ago.

Teamed with this hard-hitting dynamo of production are America's railroads. The uninterrupted, all-weather, mass transportation performed by the railroads is vital in planning, preparation, and launching of full-scale offensive warfare. For only over rails of steel is it possible to handle the mass movement of men and machines of war.

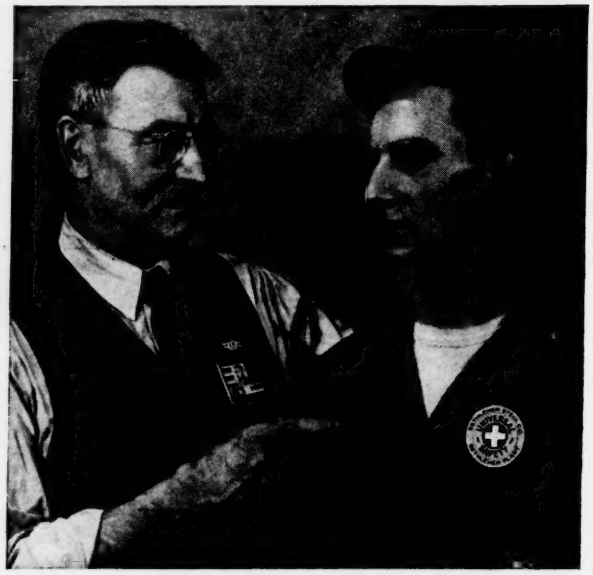
Years of practical planning and the expenditure of ten billion dollars during 20 years of peace prepared the American railroads to meet the terrific demands of this war. Today, the Norfolk and Western Railway and other railroads of the nation are handling successfully the greatest traffic load of all time. They are working day and night to "Keep 'em Rolling" so that the armed forces of America and her Allies will not lack equipment and supplies for the "big push" that will deal the final, smashing blow to the Axis solar-plexus.

.NORFOLK *and* WESTERN *Railway*

PRECISION TRANSPORTATION



SAFE WAYS IN WAR PRODUCTION

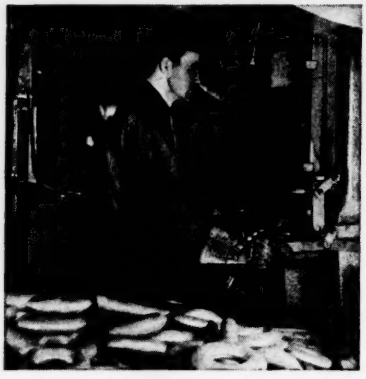


NEW WORKER—Every new employee in a Bethlehem Plant wears this button. It helps to fix his attention on safety. It signals to more experienced employees that he is new to the plant, and they keep an eye on him, and do not hesitate to offer friendly guidance in case he forgets instructions and unknowingly breaks any safety regulation.

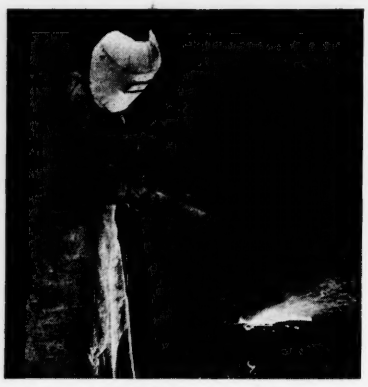
Industrial accidents, bad enough because of the human distress they cause, are also a grievous drag on production. Every day that injury lays up a worker means lowered output of the materials our armed forces are asking for.

Safety engineers know they must be more than ever on guard as pressure for production intensifies and men work against time. When war came, Bethlehem Steel Company expanded its accident-prevention program to meet the new conditions. Special efforts were addressed to the new employee to make him safety-conscious from the moment he walked into the plant. And by posters, group meetings and individual instruction, the safe way of doing his job was ground into the subconscious of new Bethlehem employee and veteran alike.

Significant are the results of a current study, showing that of all disabling accidents to Bethlehem employees less than one-third occur in the course of their work. Even with employment rolls upped by the tens of thousands and plant operations at top speed to meet the demands of the war program, the Bethlehem employee is safest, best protected against injury, during the hours he spends on the job.



AUTOMATIC HAND GUARD—This man is operating a trimming press. If he should absent-mindedly let his hands move too near the danger zone, the two cables will automatically whisk them back to safety, before the ram of the press descends.

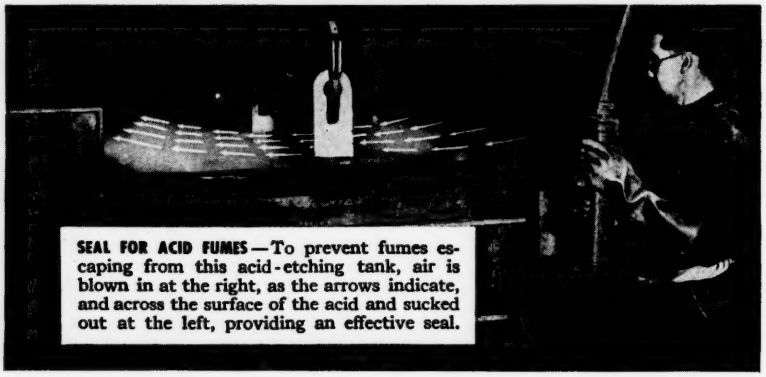


100% HEAT-INSULATED—Asbestos-covered hood, chrome-leather full-length apron, chrome-leather gloves, chrome-leather full-length sleeves and asbestos guard on torch handle give this worker complete protection against heat and flying sparks.

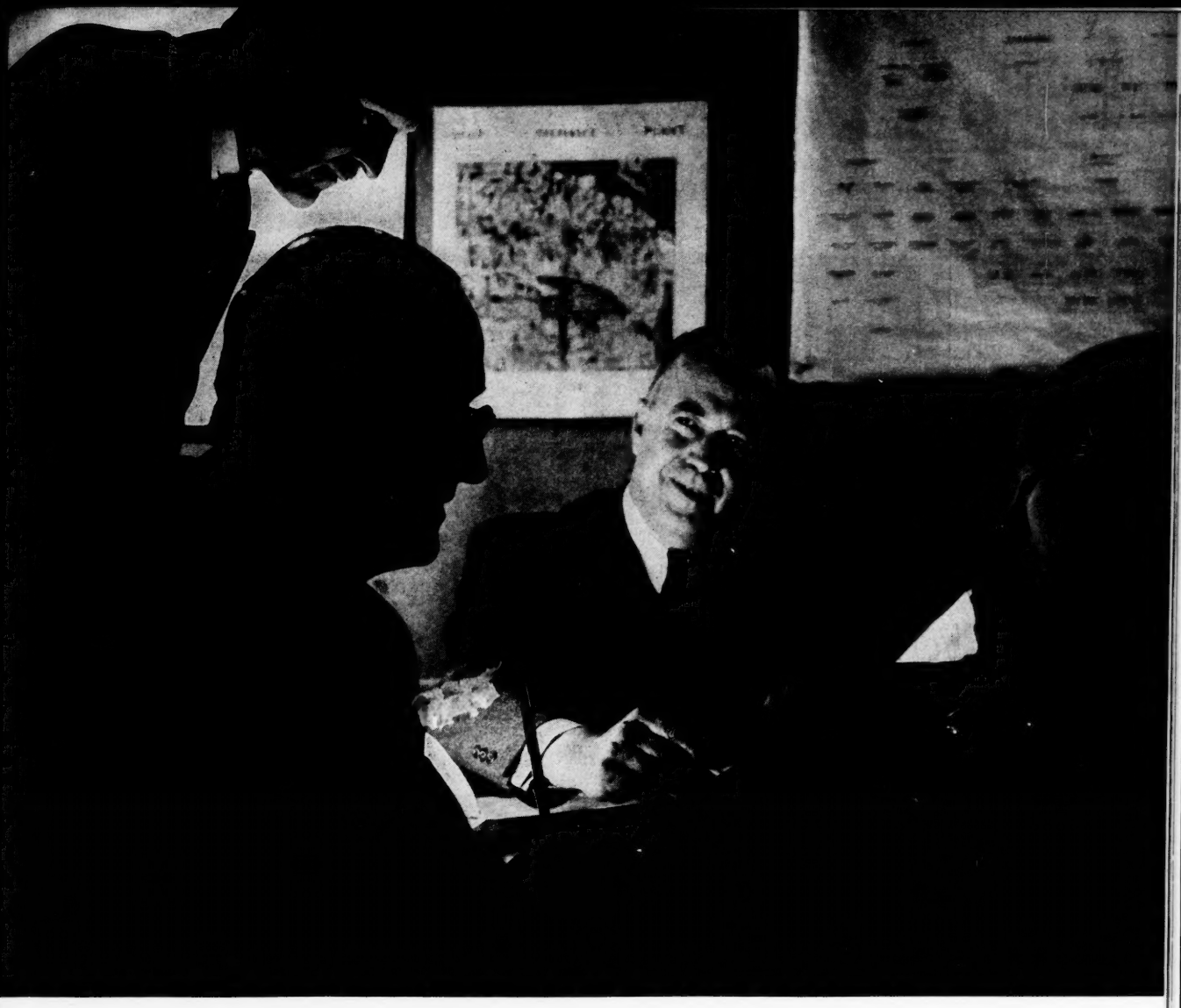
EYES DOUBLY GUARDED—Even though this grinder is equipped with a heavy glass shield, the eyes of the man who is operating it are given further protection against sparks or flying bits of abrasive by the cup goggles that he is wearing.

BETHLEHEM STEEL

Bethlehem Steel Company is actively supporting the National Safety Council in its campaign against accidents in war production, through the War Production Fund to Conserve Manpower.



SEAL FOR ACID FUMES—To prevent fumes escaping from this acid-etching tank, air is blown in at the right, as the arrows indicate, and across the surface of the acid and sucked out at the left, providing an effective seal.



FORETHOUGHTFULNESS

In 1942 these men, with their associates, rushed to record-breaking completion a large manufacturing plant for the Army on a three thousand acre site.

By forethoughtful planning they designed, built, and equipped this great project six months ahead of schedule, and several million dollars under previously estimated costs.

In 1943 ultimate speed in industrial designing, construction, and equipment work, with careful planning for post-war use, is of paramount importance.

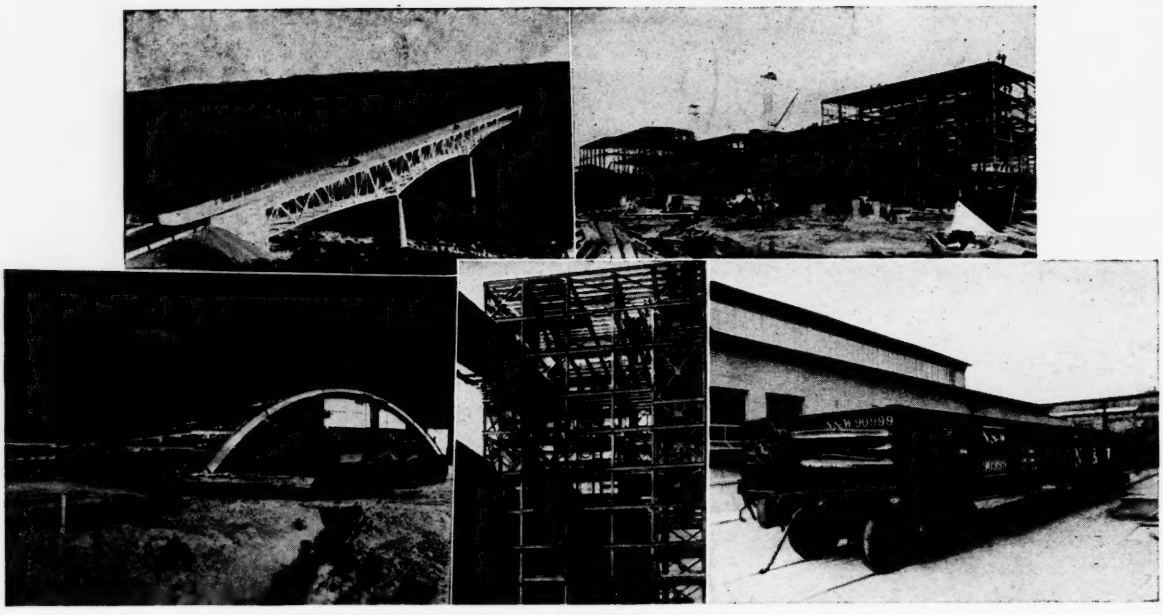
What we have done for others, we can do for you. For our preliminary suggestions and estimates, please communicate either with our New York or Cleveland Offices quickly.

The H.K. Ferguson Co.

ENGINEERS AND BUILDERS

CLEVELAND **NEW YORK**

The Sooner the Better



The sooner we can get back to building structures like these for peace-time progress the better all of us will like it.

But many of those we must build today are different because they are designed to fit into a Master Program of construction and production which has but one aim—supplying the materials and equipment of war in overwhelming volume in the shortest possible time. Under pressure of a powerful necessity the job has assumed fantastic proportions, but thanks to American ingenuity and constructive imagination it is going forward with a speed and on a scale that represents a miracle of industrial performance.

With a well known reputation for our ability to handle many types of construction involving complicated engineering and fabricating features, Virginia Bridge was destined to take an important part in a program requiring structural steel in such large quantities and varied forms. It was no accident that our Roanoke plant was among those first to receive the Army-Navy "E" Award.

Today our resources must be devoted to building the things that will hasten the tomorrow when we can again return to peace-time construction. We are prepared to give the structural steel job that will contribute to that end our maximum service and cooperation.

Virginia Bridge

STEEL STRUCTURES

All Types

Plants:

Roanoke, Va.
Birmingham, Ala.
Memphis, Tenn.

VIRGINIA BRIDGE COMPANY

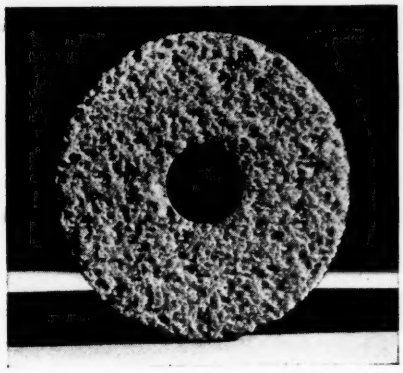
(South's Largest Structural Steel Fabricator)

Roanoke Birmingham Memphis New York Atlanta Dallas

UNITED STATES STEEL

Which Wheel Structure for YOUR Job . . . Dense, Medium, Open ?

MOST ordinary tool and cutter jobs and surfacing jobs require either the fairly dense No. 5 structure or the medium No. 8 structure, the choice being dependent on the size and shape of the tool or part and the area of contact. There are jobs however where the Norton very open, No. 12, structure (illustrated) will be found best, such as:



No. 12 Structure (Open)

(1) Surface grinding with periphery of wheel of hard, heat-sensitive steels,

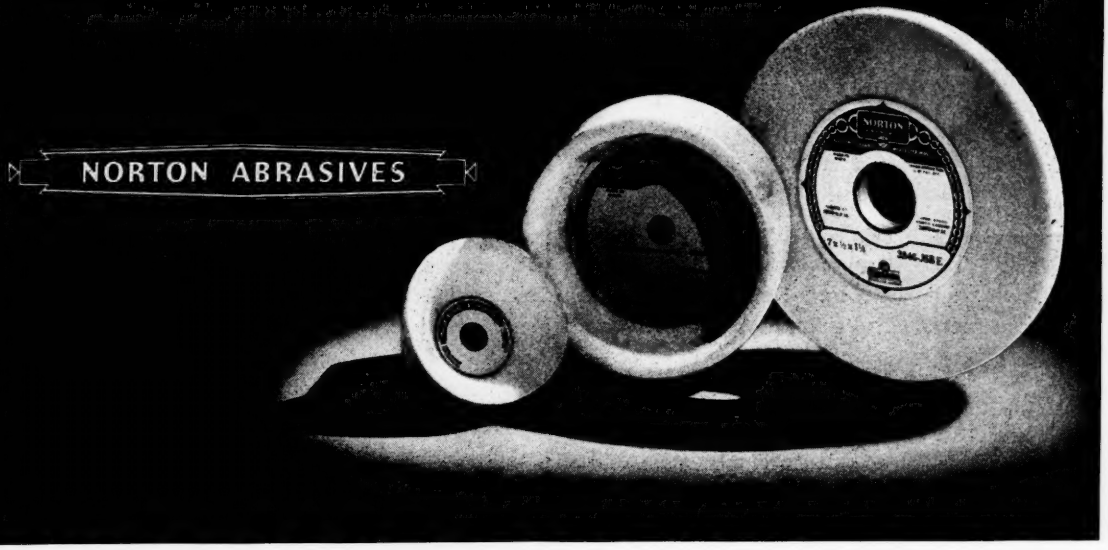
(2) Hob grinding, especially when heavy cuts must be taken,

(3) Form tools or other grinding where accurate contours are required, except where acute included angles are involved. (Structure No. 12 wheels, because of their large pores, should not be trued to a sharp, thin point.)

Norton engineers will be glad to study your tool room and surfacing jobs and select the wheel structure which will be best for each one

NORTON COMPANY, WORCESTER, MASS.

W-899



What did *you* do today ... for Freedom?

Today, at the front, he died ... Today, what did *you* do?
Next time you see a list of dead and wounded, ask yourself:
"What have *I* done today for freedom?
What can I do tomorrow that will *save* the lives of
men like this and help them win the war?"

To help you to do your share, the Government has organized the Citizens Service Corps as a part of local Defense Councils, with some war task or responsibility for every man, woman and child. Probably such a Corps is already at work in your community. If not, help to start one. A free booklet available through this magazine will tell you what to do and how to do it. Go into action today, and get the satisfaction of doing a needed war job well!
EVERY CIVILIAN A FIGHTER

CONTRIBUTED BY THE MAGAZINE PUBLISHERS OF AMERICA.

. . . of course, *we don't like it*

• We Americans are used to doing pretty much as we like. Maybe we hate to be told how much we can drive our cars . . . that we can't have as much of some foods . . . that we must pay out so much in war taxes.

But, because we're Americans, we're glad for the chance to do this *and more*. We want to work harder and sacrifice more until the final threat of slavery and brutality is driven from freedom-loving people.

The Gulf South is working with all America in order to help win the war . . . working as we've never worked before, with all our industrial might, with all our rich natural resources, and with the power of all our patriotic citizenry.

We are willing and anxious to pay Victory's price, no matter how great it may be, and speed the return home of our sons, brothers, and husbands to a free and better world.

YOUR DOLLARS ARE NEEDED FOR VICTORY NOW—BUY WAR BONDS AND STAMPS

The Gulf South

Working with All America for VICTORY

UNITED GAS PIPE LINE COMPANY

A Natural Gas transmission Company built in peacetime . . . now dedicated to serve wartime fuel requirements throughout the Gulf South.

FOR TEXAS, *Mail received at:* Beaumont, Dallas, Fort Worth, Houston, Longview, San Antonio and Wichita Falls. FOR LOUISIANA, *Mail received at:* Baton Rouge, Lake Charles, Monroe, New Orleans and Shreveport. FOR MISSISSIPPI, ALABAMA and FLORIDA, *Mail received at:* Jackson, Miss.

COPR., 1943, UNITED GAS PIPE LINE CO.

More power to the steel industry, to their metallurgists and production men, for the new steels and their new capabilities.

They are talking our language.

Industry's postwar responsibility for making civilian jobs will have to be met head-on with all the capabilities of all the materials at our command.

No matter how much we might wish it, Alcoa Aluminum can never be best for everything. There are lots of things the new steels do better than Alcoa Aluminum can. And, with much emphasis we say: *Vice versa.* We also see spots where aluminum *and* steel together are the answer.

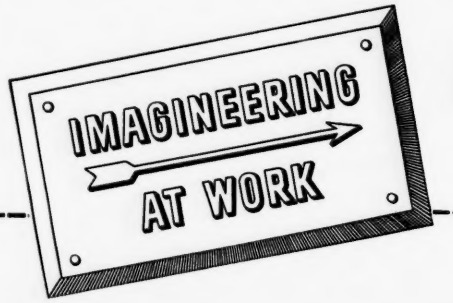
The real hope of making jobs, i.e., of America having a successful business structure after this thing is over, lies in doing things differently. Tradition must be shouted down, and we welcome the new steels to the party.

Every man who has the foresight to use his eighth day of thinking time for Imagineering has thrilling tools to work with.

One thing about Alcoa Aluminum: *Nature made it light.* Alcoa research has made it strong, and versatile, and cheap.

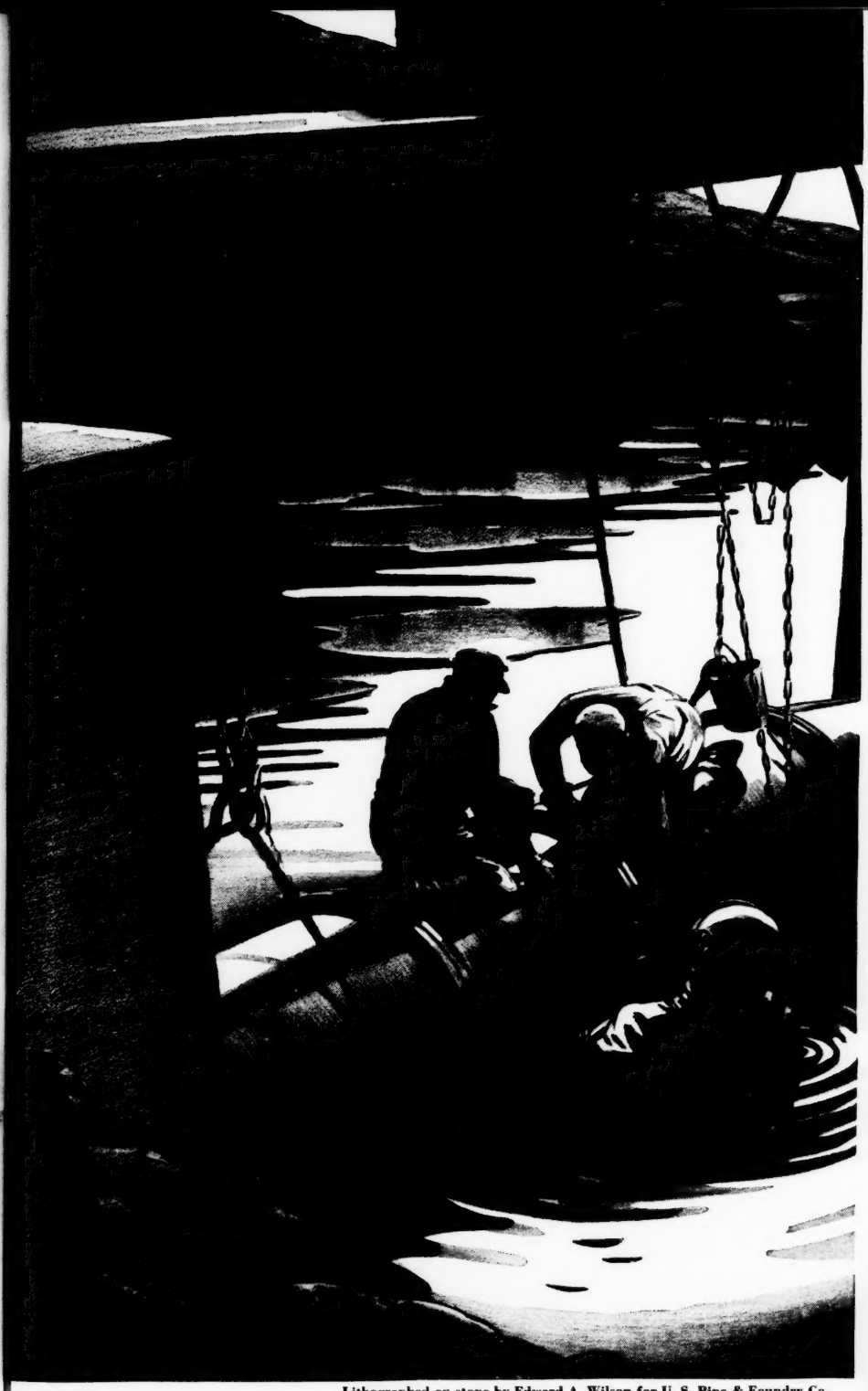
One thing about the future: There isn't going to be time or money or patience to waste on horsing dead weight around, or up or down, or on the level.

ALUMINUM COMPANY OF AMERICA, 2109 Gulf Building, Pittsburgh, Pennsylvania.



Alcoa Aluminum

ALCOA ALUMINUM



Lithographed on stone by Edward A. Wilson for U. S. Pipe & Foundry Co.

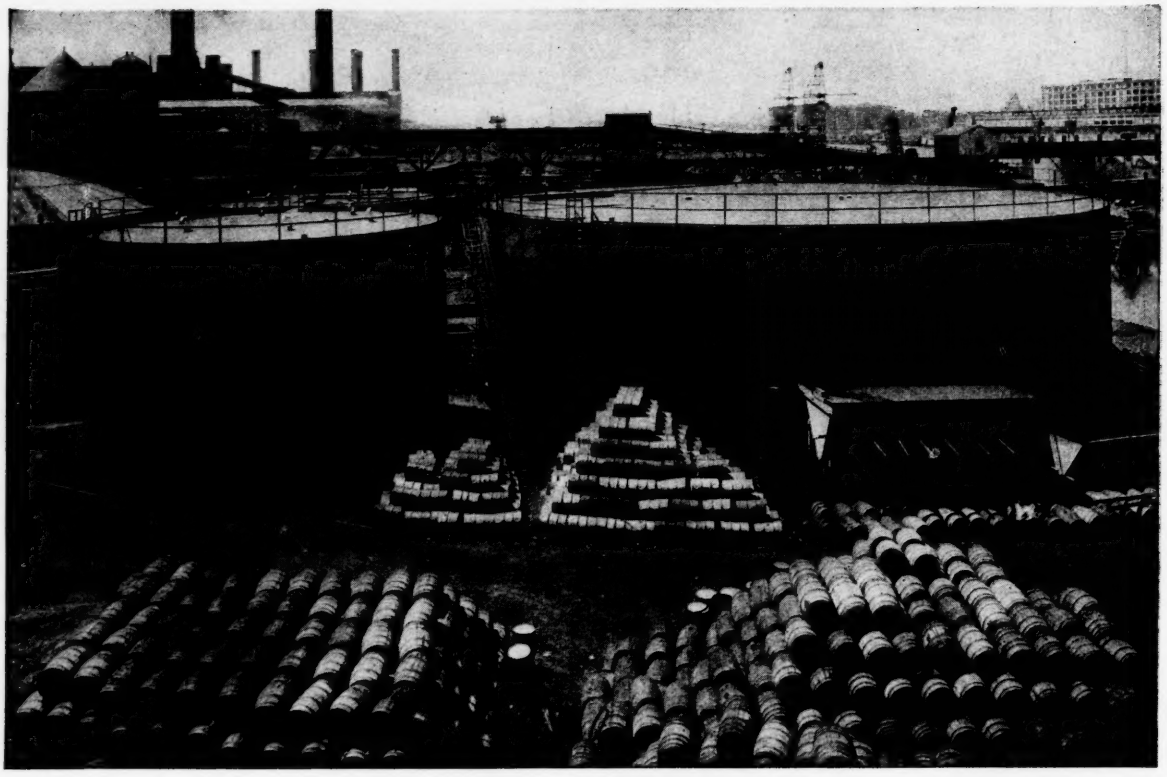
The *number-one job* of our research technicians is developing processes by which we can make still more products, in addition to cast iron pipe, necessary to the winning of the war. In so doing, we are fortunate in having our standard product at its peak of development. We manufacture cast iron pipe in accordance with the American Water Works Association specifications—American Gas Association specifications—Federal Government Specification W. W.-P-421—as well as in accordance with the Law of Design recently adopted by the American Standards Association. In addition, we are fully prepared to manufacture cast iron pipe in accordance with specifications which may be written for specific conditions.

U.S.
cast iron
PIPE

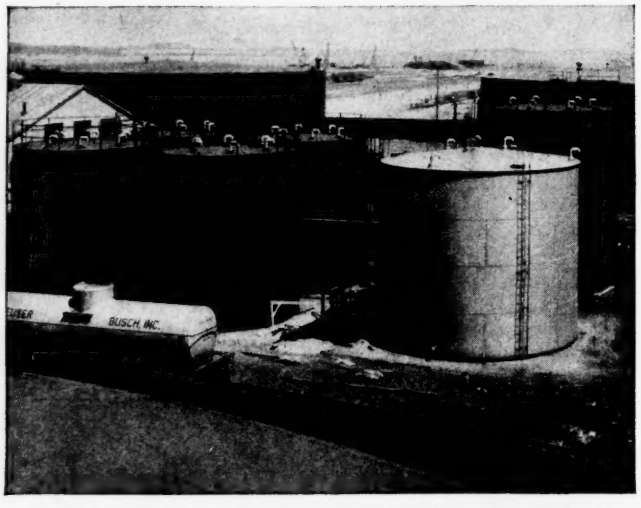
U. S. PIPE & FOUNDRY C

General Offices: Burlington, N.

Plants and Sales Offices throughou



TRAINING CAMP FOR A "Fighting Food"



Top: Two 47½ ft. diam. and one 101½ ft. diam. molasses tanks at plant described at right.

Directly Above: Four 22¾ ft. diam. one 30 ft. diam. and one 30½ ft. diam. molasses tank.

Getting molasses into condition to help sustain United Nations' fighting forces and civilian workers is made easier with *modern* storage and refining facilities.

Eighteen months ago a large east coast molasses refiner undertook a plant construction program resulting in a modern storage, refining, processing and packing operation which is virtually automatic from the time tankers discharge their huge cargoes of raw molasses until the packaged products leave the plant. In this installation the main storage facilities consist of eleven Horton flat-bottomed steel tanks, having a total capacity of approximately four million gallons.

Thousands of plain storage tanks and tanks to meet more complicated storage problems are serving many types of industries . . . doing their part in the war effort.

CHICAGO BRIDGE & IRON COMPANY

Birmingham .....1530 North Fiftieth St.
Houston .....5614 Clinton Drive
Tulsa .....1611 Hunt Building
Greenville .....York St.
New York .....3313-165 Broadway Bldg.
Cleveland .....2216 Guildhall Building
Chicago .....2106 McCormick Building
San Francisco .....1040 Rialto Building
Philadelphia ....1619-1700 Walnut Street Bldg.
Havana .....402 Edificio Abreu
Washington .....330 Bowen Bldg.

Plants in BIRMINGHAM, CHICAGO and GREENVILLE, PA.

EXHAUSTING PUBLIC PATIENCE

John L. Lewis, self-professed American, in the name of the United Mine Workers, is about to demand a tremendous pay increase for his "meal tickets." If he succeeds he will have justified the increase in union dues—which the miners claimed was decided without their consent and which they liked so little some of them went on strike.

Fuel oil is scarce. Coal is none too plentiful. Transportation complicates the distribution of both. It is an ideal situation for the Czar of the United Mine Workers to clamp down on the American public and demand his pound of flesh. His organization is assured of its income from the companies which take it out of the payrolls of the men who work at hazardous jobs. The men are not trusted to pay their own union dues. Five hundred thousand dollars of such money, culled from union workers who had to be union workers in order to be able to work, helped to reelect the New Deal in 1936, and the New Deal appears still to be paying its political debt.

But what about the rest of us who have factories to keep running and homes to keep warm? What about the great part of the American public which is doing with less and less and paying out more and more?

The American public is protected by law from exploitation by any one or any combination of producers or distributors of products, essential or non-essential. It is being exposed, however, to exploitation by a man, or small group of men, purporting to represent labor, who are encouraged by the Wagner Labor Relations Act—a fascist law. They control billions of dollars, sweated out of the bodies of the working men and women whom they claim to represent, but as recent events have proved, cannot control.

The solution to such a problem is so rational and reasonable, that it should be a challenge to our government. That challenge would have been accepted, no doubt, long before now, but it was thought to be politically inexpedient to do so. In our opinion that is no longer true. The public is exasperated by the attempts of Union leaders to dominate and disregard public rights. The solution, of course, is to have every labor union incorporate and become subject to the federal anti-trust laws.

LOOKING AHEAD

When peace comes

The largest domestic and foreign markets in history will be ready for any producers who can serve them. In the long run, only the low-cost producers will hold them.

INDUSTRIALISTS WHO ARE LOOKING AHEAD

are invited to examine these special factors in CHARLESTON COUNTY, SOUTH CAROLINA, which will insure competitive superiority to those who serve both domestic and foreign markets.

★

Industrial Water: Still unallocated, are 300,000,000 gallons per day of water chemically suitable for cooling and processing at tidewater locations.

★

Power: Public utilities in this area, nationally recognized for their cooperation with industry, are now delivering electric energy at the rate of more than 1,000,000,000 kilowatt hours a year for military camps and war production—all available for post-war industry.

★

Transportation: Charleston is a focal point for marine, rail, highway and air transportation . . . the Intracoastal Waterway offers low-cost barge transportation for bulk cargoes. . . . Additionally, Charleston's superior harbor offers the shortest haul to more foreign countries than any deep-water port on the Atlantic seaboard . . . and there are excellent terminals available, with deep-water sites for those who prefer their own terminals.

★

Housing: After the war more than 10,000 new housing units will be available for industrial workers.

★

Continuity of Operation: Charleston County is an all-year manufacturing area, due to the warming effect of the Gulf Stream in winter. The average temperature is 67 degrees. Thus, the climate of Charleston offers the manufacturer year-round working hours, low heating costs for his plants, economical living conditions for his employees, less loss of time from sickness and cold, and no shut-downs due to weather.

Back of these economic tangibles stands a fine citizenship. It has been alert and progressive through the years. It is a cultured citizenship—well educated, informed, acquainted with the correct approach to honest work and intelligent living. It is a citizenship that believes in all the fundamentals of the American Way of Life.

This County offers industry a reliable and thorough cooperation from the concept of development throughout the years of operation.

FOR DETAILED INFORMATION WRITE

CHARLESTON INDUSTRIAL BUREAU

50 BROAD STREET

CHARLESTON, SOUTH CAROLINA

THE SOUTH *and the* NEW DEAL

The South, a solid political unit for many years, has permitted a gigantic theft. The Democratic party, despite its platforms and purpose for representative government, has been stolen.

And unfortunately this has been done while the South looked on.

The press of the South, aware of the situation at last, is calling a spade a spade.

How Southerners believing in themselves and their inherent political principles can reconcile these principles with New Dealism is hard to understand. According to the New Deal, all authority should be centralized in the administrative branch of the government in Washington. What then happens to states' rights or even to Federal legislation by representation?

According to the New Deal, lobbying blocs should be pandered to.

According to the New Deal votes are votes and they have been obtained in the South by Utopian promises impossible of fulfillment over the years, and despite the threat they convey of a situation that may well approach conditions existing in the day of the carpet-bagger.

According to the New Deal great cities like New York, Chicago, Jersey City, to mention a few, are asked to support corrupt politicians who support the New Deal.

According to the New Deal organized labor is encouraged to contribute as was done in 1936, to a political war chest, and thus has placed around the neck of government a noose from which it cannot escape.

According to the New Deal, which uses the Democratic label, the South has been relied upon for solid political support.

On the one hand it is a political asset that can be counted on as completely "in the bag." On the other hand it can be held up as a sad example to the nation as "economic problem No. 1."

This is the New Deal estimate of a section of the country that is one-third of the area of the United States and comprises one-third of its population.

This section has since 1929, and through subsequent years of depression, made greater progress than the rest of the United States. By 1939 the dollar value of the South's manufactured products was less than 6 percent below that reached in 1929, while the balance of the country was still almost 24 percent short of its former volume.

The South, this same section, with 90% of its population American born, has for that reason more nearly found the way to happiness and well-being than areas more congested. And, at the same time has accomplished a development that has amazed the world.

It has over 75% of the active spindles in America and turns out 85% of the country's total cotton manufacture.

It produces 70% of the rayon made in the United States.

It has an annual mineral production valued at approximately $2.000,000,000 compared to $2,600,000,000 for all the rest of the United States.

It has a crude petroleum production volume annually of 828,000,000 barrels compared with 600,000,000 for the rest of the United States.

It has a manufacturing output volume annually of more than 15 billion dollars, which is four times its total cash value from agriculture.

Its output of important products in percentages as listed below show the economic importance of the South to the country as a whole.

Bauxite	100%	Rice	85%
Naval Stores	100%	Fertilizers	70%
Sulphur	99%	Natural Gasoline	69%
Carbon Black	95%	Seamless Hosiery	69%
Phosphate Rock	95%	Crude Petroleum	59%
Cotton Lint	93%	Cast Iron Pipe and Fittings	52%
Tobacco	90%	Bituminous Coal	49%
Kaolin	90%	Sawed Lumber	44%
Fuller's earth	90%	Wood Pulp	41%
Cotton Yarn	85%		

It is time for every American, whether he lives in the South, North, East, or West to face the fact that New Dealism is political opportunism and has been nothing else from its start. It is also time to face the fact that New Dealism is in the hands of visionary and ambitious mental youngsters who, claiming to be working for the well-being of the country, are laying a foundation like that which brought about the decay and downfall of Rome.

Katy's Most Prosperous Year

Record increases in passenger and freight revenue

$14,000,000 spent for improvements

By
MATTHEW S. SLOAN
Chairman of the Board and President
Missouri-Kansas-Texas Lines

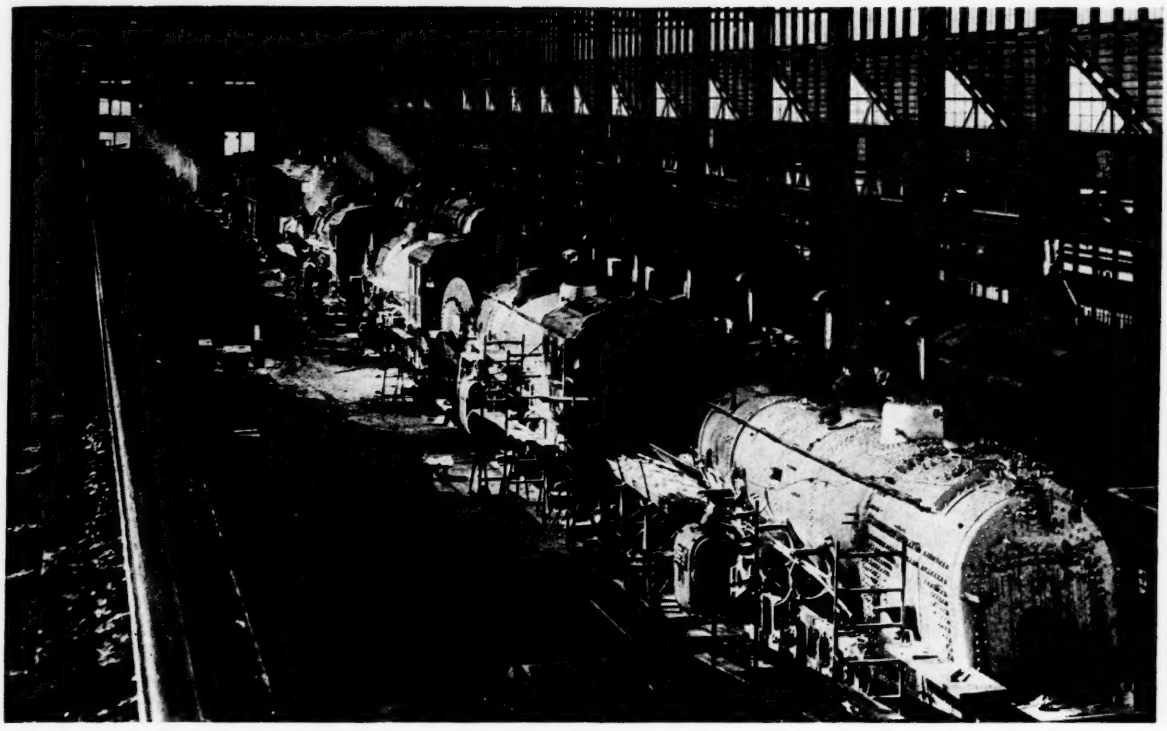
EMERGENCE into a position of financial security, following a long period of lean years, and at the same time rebuilding and rehabilitating its physical properties in a very substantial degree, was the task accomplished by the Missouri-Kansas-Texas Lines (popularly called the Katy) in 1942. The year was the most prosperous in the history of the present company, which enters the new year in position to perform an even more useful transportation service in the great Southwest served by its lines.

The enormous increases in traffic volume, both passenger and freight, which marked the year, were gratifyingly reflected in company revenues, with the gross two-thirds more than that of the year preceding. The result was that, even with the greatly increased cost of handling such expanding volume of traffic, approximating $4,000,000, and a tax bill higher by a million, there was yet left revenues from which to carry out the company's improvement program, and some $14,000,000 was poured back into the property, for maintenance and rehabilitation of way, structures and equipment, or an increase in expenditures for such purposes as compared with the year 1941 of $6,500,000. Literally hundreds of new right-of-way and yard buildings have been erected and all structures on the railroad have received fresh coats of paint. All bridges have received attention and each given two coats of paint. One hundred and thirty locomotives and thousands of pieces of freight and passenger equipment have been rebuilt and the number of locomotives and cars in bad order has been reduced until it is negligible—as low as that of any railroad in the country.

The Katy adopted its extensive equipment rehabilitation program partly because of difficulties attending the efforts to purchase new equipment, but largely as a measure of salvaging every piece of equipment possible and reemploying shopmen who had been long on furlough due to the protracted depression. The program was inaugurated in 1941 and reached its maximum in 1942. While the work already completed has resulted in a substantially new railroad as to roadbed, structures and equipment, it is not finished and will be continued during 1943.

With a mechanical organization and personnel second to none, the Katy's improvement program has been marked by real efficiency. This characterizes the work at all the shops, locomotive at Parsons, Kansas, and Waco, Texas, freight car at Denison, Texas, and passenger equipment at Sedalia, Missouri. The assembly line system of car-rebuilding was put into effect, producing the most satisfying results. The procedure at the Denison car shops, where a rebuilt box car, freshly painted in bright Katy

A-B type air brake pipe assembly jig, Katy Denison freight car shops, where complete air brake pipe assembly is constructed as a unit before being applied to car.



Locomotives moving along the assembly line in course of rebuilding at one of Katy's locomotive shops.

yellow is turned out every 45 minutes, is illustrative. The fundamental idea behind it is that of moving the cars to the men instead of the men to the cars.

The first trip of the car is to the stripping track. Here all wood is removed, quickly and efficiently. Torches burn through the wood around bolts, sledgehammers and crowbars rip it from the steel framework. In a surprisingly short time the car is nothing more than a skeleton, ready for the steel shop.

There the first step is straightening of the corrugated steel ends. Every inch is inspected carefully and all defective parts are removed and either replaced by new parts or repaired to new condition. A huge crane lifts the body of the car from the trucks, the trucks are removed, and the body lowered to jacks, thus offering the most accessibility possible to workmen.

The trucks themselves are completely dismantled for ease of inspection and replacement of parts. A crew of 4 men handles 20 trucks a day in this manner. Wheels and axles are minutely gone over, and those found defective are sent to scrap. Others are given needed repairs. After the wheels are removed from axles by a specially-designed wheel press in the wheel shop, bearings and axles are returned on lathes. Re-assembled and as good as new, the trucks are returned to the steel shop and placed upon the rails beneath the car body, which is then lowered and tied to the trucks.

When the car passes final inspection in the steel shop it is sent to the sand blasting department. Here the steel is subjected to a thorough cleaning with sand propelled by tremendous pneumatic pressure. This sand blasting eliminates all rust and mill scale and leaves the steel work bright and clean, ready for the application of the metal primer, a red lead preparation, sprayed on, which acts as a metal preservative and, on parts which are to be painted further, as a base for the final paint coating.

Before being primed, however, the car goes to the pipe shop, where all A-B type air brake piping is assembled and put on the cars. Here is found one of Katy's many contributions to efficient assembly of cars in the form of the A-B type brake pipe assembly jig. This jig, developed by Tom E. Martin, pipe and air brake foreman, and his crew of workers, allows the complete assembly of pipes and fittings before being installed on the car.

The pipes and fittings are tack-welded while held in position by the jig, then removed and given the permanent welding. The completed assembly is then placed in position on the car and welded to the frame.

After the air brakes are in place the car receives the priming coat mentioned above, then moves into the wood erecting shop. Here the first operation is the laying of the floor. Sides, roofs and linings are quickly added. Boards are tongued and grooved and are buckled into position, providing greater stability and strength and contributing to longer life of the car. Much of the wood used is cut and milled in the shop mill, a considerable portion coming from the cars previously stripped.

The car next moves to the finished position, where running boards and side doors are applied. Here again time and labor are saved by assembling the separate pieces off the car and applying them as a unit. When the woodwork is completed the car undergoes final inspection before being painted. If okayed, the car moves to the paint shed, where the famous Katy yellow is sprayed on.

(*Continued on page* 58)

ESSENTIAL COTTONSEED

By

A. L. WARD

Director, Educational Service
National Cottonseed Products Assn.

ONE hundred thousand bullets can be fired by the powder produced from one bale of cotton linters.

More pounds of badly-needed feed for livestock are produced per acre by the cotton plant than pounds of lint.

"Second only to steel as the most vital war material" is the way cotton is described by the Quartermaster Corps of the U. S. Army.

Such facts as these are causing military, agricultural and business leaders of the United States to call for a revaluation of cotton's part in the war effort. They are causing many people to revise their thinking about cotton; and the need for cotton is causing serious concern among many, within the industry and without, who are looking at the whole cotton picture.

What is Cotton?

Failure to understand what cotton really is has caused much of our difficulty and misunderstanding. Lint cotton is so important to all of us—so influential in the social and economic life of the Cotton Belt, the United States and the world—that it is a common practice to think of "cotton" as lint, alone.

This is misleading. It gives us a distorted viewpoint as to the cotton crop; it overlooks four out of the five primary products of the cotton plant; and it causes us to fail, badly, to give to the cotton plant its proper place in agricultural production in the Cotton States, in the chemical industry, in the food industry and in other varied fields.

In order to understand the part that cotton is playing in the war, and can and should play in the peace after this war, it is essential to consider all five of the primary products of the cotton plant today: Lint cotton, cottonseed oil, cotton linters, cottonseed meal and cottonseed hulls.

Powder and Panties

Cotton linters are confusing to many people because of the similarity between the terms "lint cotton" and "cotton linters." But, as most readers of MANUFACTURERS RECORD know, the short fibers that the oil mill removes and calls "cotton linters" are a distinct product, not to be confused with the "lint cotton" which is removed by the cotton gin before the seed goes to the oil mill.

Because they are such an excellent source of explosives, all of the cotton linters that we are producing in this country today are going to meet the war needs of the United States. No other oilseed which is being produced supplies these linters and every time that we cut out a bale of lint cotton from this country's potential production, we are cutting out linters enough to make the powder to fire some 12,000 or 15,000 bullets.

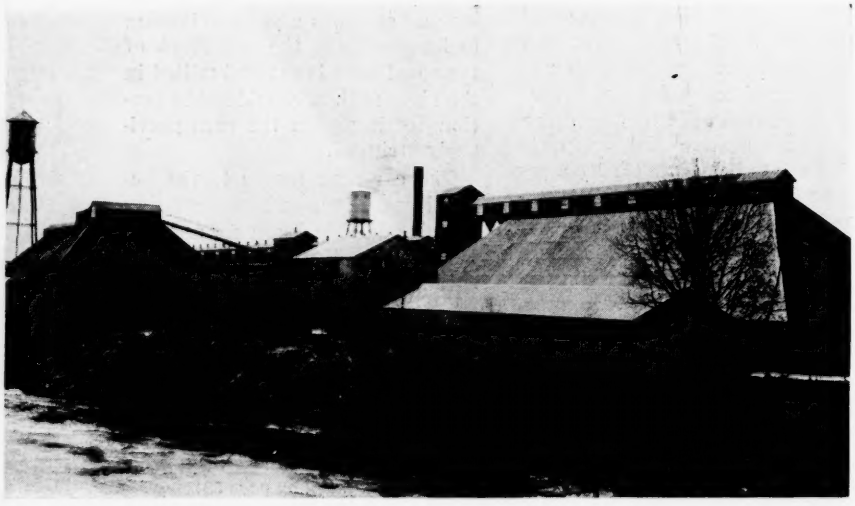
Peacetime uses of cotton linters —ranging from dainty underclothing made of rayon to absorbent cotton, lacquers and enamels, safety glass, motion picture films and phonograph records, to mention but a few—are important also. As a source of high-quality cellulose, cotton linters are widely used today and offer a very important field for further development in the future.

Mention of rayon along with lint cotton calls attention to the interesting fact that the cotton plant plays a very important part in the production of four of the leading fibers in this country. In addition to the lint cotton, and the rayon made from linters, much of this country's wool and mohair is produced by sheep and goats fed rations containing cottonseed cake and cottonseed hulls.

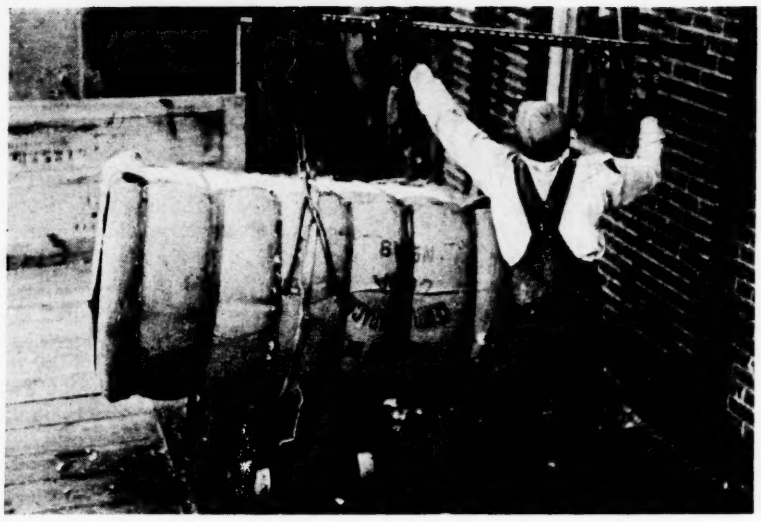
Costing Us Food

Because of our fear of "too much lint cotton," we have paid a heavy penalty of reduced production of meat and milk and other livestock products throughout the Cotton States and the West this winter. We shall continue to pay this tax of less food for fighters and workers so long as we curtail our cotton production below the needs of livestock producers for protein, which is contained in concentrated amounts in cottonseed cake (or the same product in the form of meal, pellets or cubes).

Oil mills of the Cotton States have been crushing all of the cot-



Most of the nation's facilities for crushing oilseeds (cottonseed, soy beans, peanuts, linseed and others) are at such mills as this and they are largely located in the cotton states of the South. Cotton oil mills have the capacity to handle 12 million tons, far more than the present volume of cottonseed.



100,000 bullets can be fired by the powder made from the bale of cotton linters shown above which is produced from cottonseed by an oil mill. Of all the oilseeds, only cottonseed supplies linters for munitions. Below—In such presses as these, cottonseed gives up its valuable sources of food in the form of cottonseed oil, and cake, meal and hulls which are needed to feed livestock.

tonseed that they can get as fast as they can, crushing all of the peanuts they can get and, in addition, crushing large tonnages of soybeans from the Corn Belt which does not have the facilities for handling oilseeds as do the more than 400 oil mills of the Cotton States.

But, because every 500-pound-bale reduction in cotton has reduced the supply of livestock feed by 640 pounds on the average (about 400 pounds of cottonseed meal or cake and 240 pounds of hulls), oil mills have not had the raw material from which to produce the cottonseed meal and hulls that livestock feeders have needed in 1942-43. Without going into discussion of the various complexities of peanut production and marketing, soybean movement and other factors, the lack of cottonseed at the points where crushing equipment is available is the fundamental cause of the lack of needed feed.

Through its cottonseed meal and hulls, cotton is the most dependable "feed crop" in the Cotton Belt, as well as our most dependable "cash crop" on account of its ability to withstand heat, drouth, and other factors. Furthermore, our farmers know how to produce cotton — our soils, generally, are adapted to cotton—and the Cotton Belt has all of the facilities to handle the crop. With Secretary of Agriculture Wickard talking of the danger of a two-million-ton deficiency in protein supplies next year, the Department of Agriculture certainly should give the Cotton Belt a greater opportunity to utilize its proved ability to produce protein in the form of cottonseed meal. Unless this is done, another very serious deficiency in feed threatens the livestock industry of the United States, and especially the cotton-growing region.

More Fat Needed

Everyone who has recently tried to buy fats in their various forms —butter, lard, shortening, salad dressing, salad oil and others—is well aware of the increasing scarcity of this nutrient that is so important as an energy food. Need for fat, even more than the need for protein, has been the primary reason for the rapid and great expansion of the soybean and peanut acreages in the United States.

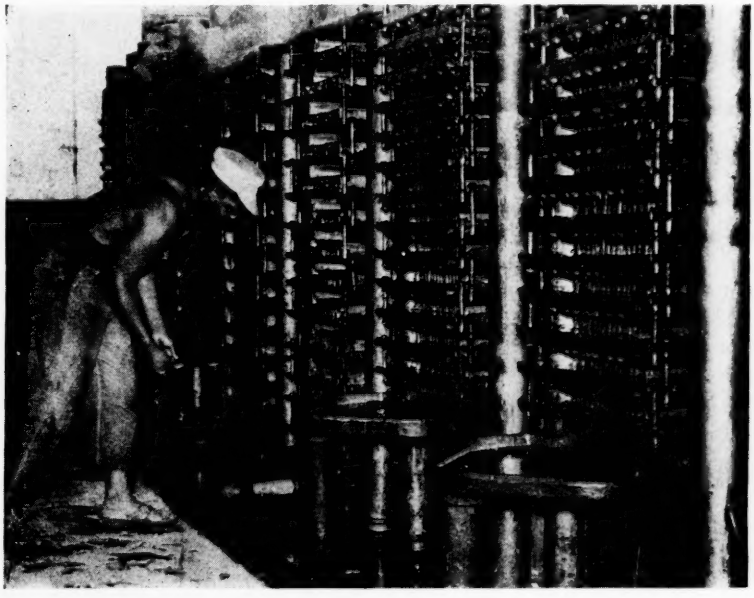
While we have been increasing the acreages of these crops—as we should do—we have neglected the potential capacity of the Cotton Belt to produce greatly increased quantities of fat in the form of cottonseed oil. On the average—and the yields vary widely in different parts of the Cotton Belt and under varying conditions — about 140 pounds of oil are produced every time we grow a bale of cotton.

Must Have More Cotton

Whatever the problems of staple cotton may be—and many informed authorities in the field believe strongly that all of the lint that we produce now will be needed after the war ends — the need for the products of cottonseed justify increased production of cotton.

When we are engaged in a world war, calling for ever-increasing supplies of the munitions and foods that are produced from products of the cotton plant, we cannot afford to do without about 850

(*Continued on page 58*)



CHEMICALS in WAR and PEACE

By

THEODORE G. JOSLIN

Director of Public Relations
E. I. duPont deNemours & Co.

MODERN war is a conflict of chemicals with the United States buttressed by a chemical industry that wrote a new Declaration of Independence after the last war in terms of laboratories and plants.

Lacking a chemical industry we would stand disarmed. Not a plane would fly, not a tank would move, not a gun would fire. Our armies would be helpless against our enemies.

Everything that moves to the battlefront in modern war has the single objective of bringing chemicals into action against the enemy. All explosives are chemicals, and so, too, are the high-test fuels that drive the motors, the tires that grind under the motor transport trains, the dyes that color uniforms, the medicines that heal the sick. The airplane, while a machine, is equally a composite expressed in metals, plastics, and liquids.

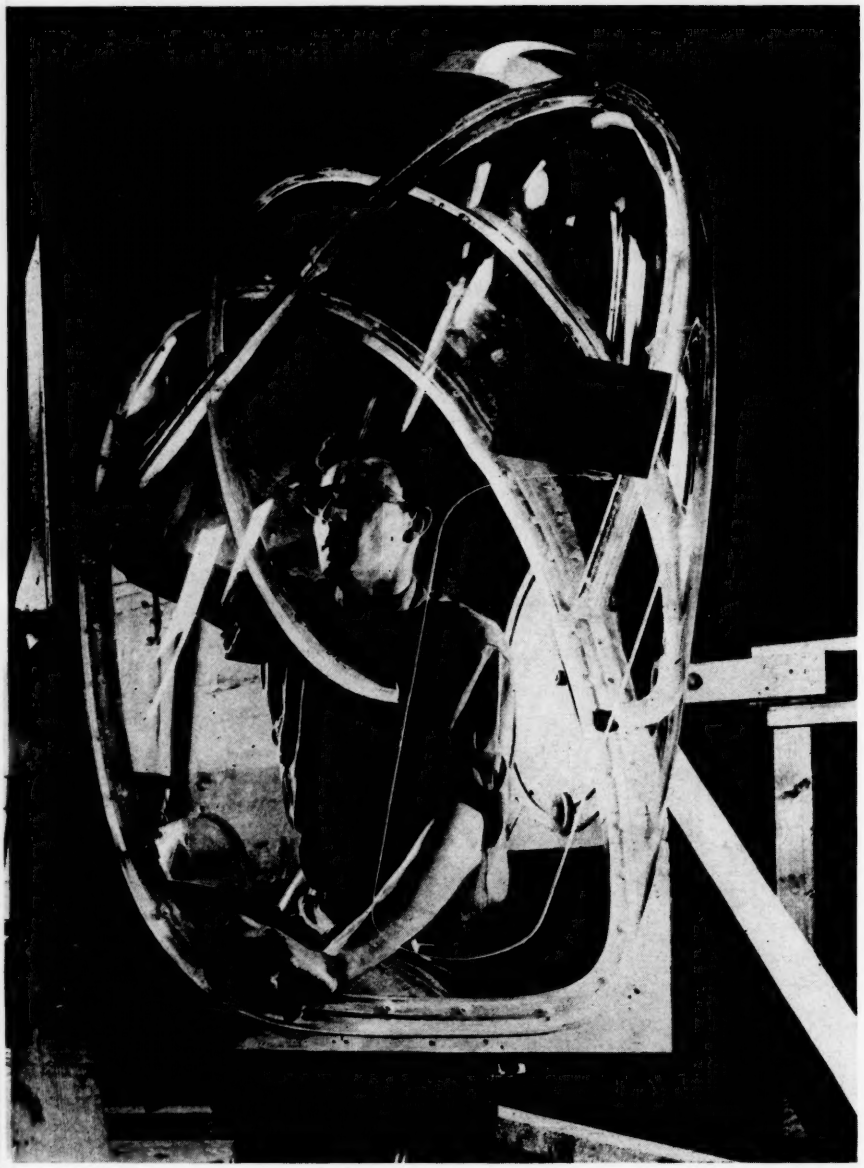
In peace, chemicals are the life blood of all industry. We are doubly dependent on them in modern war. A laboratory may have the striking force of an army. That fact was perhaps the greatest lesson learned by the United States in the First World War. Today, we can thank God that the lesson was learned in time for practical application in this titanic struggle.

German chemists in 1914 had a headway of half a century over all competition. She made three-fourths of the world's dyes, holding a whiphand over American textile, leather, paper, paint and ink industries. Even our paper 'money' and postage stamps were printed with German-made colors. Our hospitals looked to Germany for vital drugs.

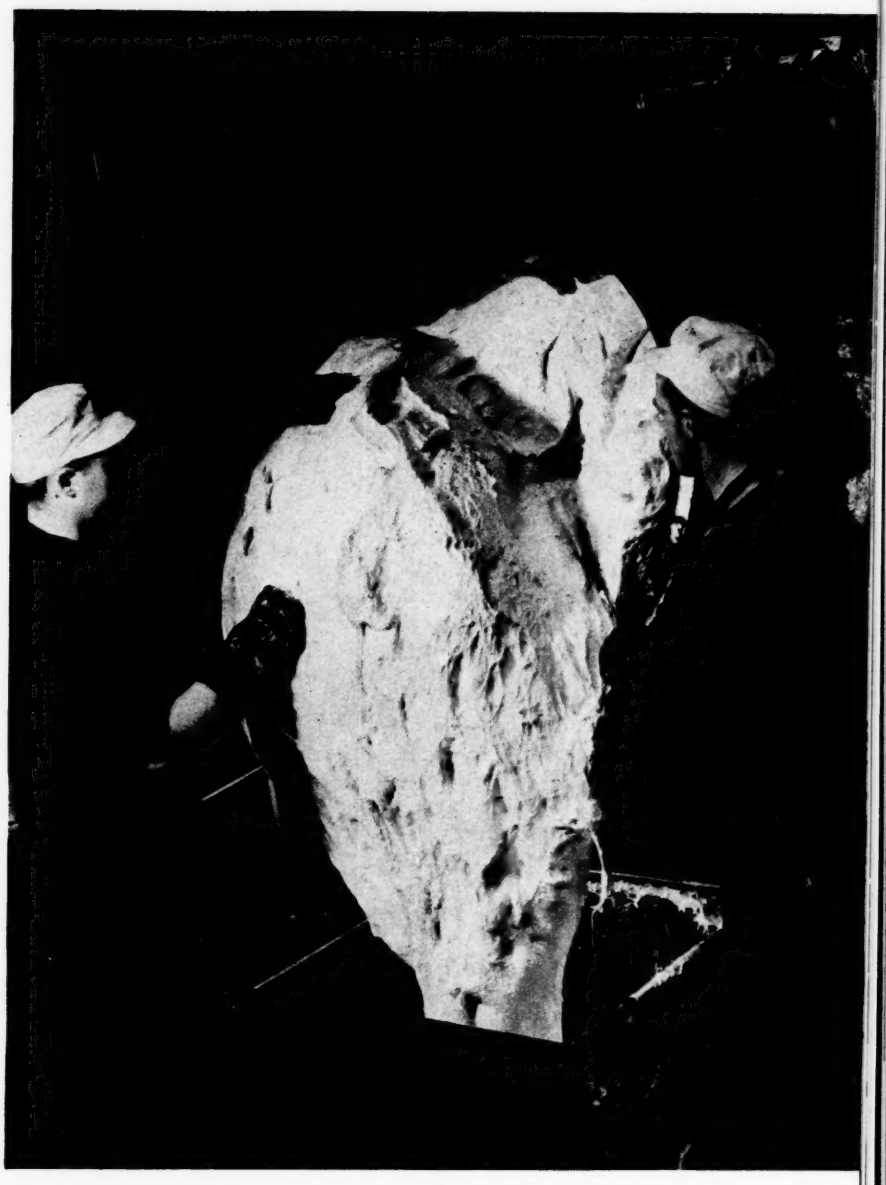
The German hob-nailed boots pounded toward Paris behind a destroying rail of TNT and other new explosives produced on a scale far beyond all previous conceptions. The old type of warfare, which had been fought with black powder and shrapnel, was obsolete overnight.

Potash, necessary to food production, cost up to $600 a ton during World War I. We frantically spent vast sums in an effort to overcome this German monopoly that ruled over our dinner tables. The nitrate plants started at Muscle Shoals testified to the desperate situation we faced in nitrogen, needed for crops and explosives alike, and them mostly imported from distant Chile. Germany was beginning to get her nitrates from the air.

Our plight might have been similar following Pearl Harbor save for the courage and deter-



Some idea of what plastics—that marvel from the chemical world—means to us in the war effort can be gained from this crystal-clear nose of "Lucite" methyl methacrylate for a Martin bomber which is one of the largest plastic pieces ever manufactured on a mass production basis. It measures about 4,000 square inches in surface area and weighs more than 45 pounds. What such plastics will mean to us in peace time can be gauged from the comment "we will have glass that is unbreakable and glass that will float."



Another marvel of the chemist's ingenuity is synthetic rubber which is having ample opportunity to prove itself in the present emergency. What this will mean to us when peace returns remains to be seen though it is doubtful if we will ever again be dependent upon foreign sources for our supplies. Here, operators are seen wearing synthetic rubber gloves while assisting in the pouring of "neoprene" rubber from the polymerization kettle.

mination of American business. Here and there were men—men with vision and venture capital—who resolved that this thing would not happen again. They wrote a new American Declaration of Independence in terms of American laboratories, American factories, and American investments on American soil.

Today, all the potash we can use is produced in the United States. The nitrogen without which our farms and a sizable part of industry could not operate, and without which we could not produce a pound of explosives, is being taken by chemical processes from the atmosphere. Both of these developments have come about mainly during the past 15 years, and most fortunately so.

We are now producing our own dyes and related fine chemicals in huge quantity and infinite variety. Camphor is being processed in chemical plants from southern turpentine, at a fraction of the former cost. Silk has been bettered by nylon—made from coal, air and water—an epochal achievement in chemical synthesis.

Over a century was consumed in bringing world crude rubber production up to a million tons annually. The United States is now undertaking to accomplish almost as mighty a feat in less than two years, by the manufacture of chemical rubbers from petroleum, farm crops, and coal and limestone.

When peace returns we will have glass that is unbreakable and glass that will float, wood that won't burn, and laminations of plastics and wood that will compete with the structural metals. Hosiery derived from air, water and coal, a wonder of pre-war days, is but the forerunner of many innovations from the same source, ranging from shoes that contain no leather and window screens that contain no wire, to machinery bearings that contain no metal.

Never before in history has a people at war had so much to gain by speeding the day of peace, for beyond us, visible even now and challenging our courage to win through to it, lies the frontier of an empire that is of vaster potential riches than all the Axis conquests combined.

For instance, the aluminum producing capacity being created will furnish enough metal in one year to build three times the number of passenger cars now operating on all American railroads. Aluminum has become a major metal cheap enough to build boats of it and plentiful enough for use in building automobiles and, mark this, houses.

The chemist is also certain that homes will be better and cheaper, probably air-conditioned and more efficiently heated and lighted than seemed possible before.

When the great conflict has ended, the huge new capacities for producing the finest in metals, plastics, fuels, fibers and countless other materials will be awaiting peaceful use. The past will be written off, the wraps removed from the war's secret development, and the old book of rules discarded.*

*Extracts from an address made before the war-time New England Sales Management Conference.

LANDING VESSEL PRODUCTION SPEEDED at CHARLESTON

South Carolina Navy Yard has assembly line to step-up "Tank Taxi" output

PRODUCTION of sturdy tank landing vessels on the ways of the Charleston Navy Yard has been speeded up to record time through the cooperation of widely-separated southeastern manufacturers who are prefabricating huge multi-ton ships sections.

Adapting itself to assembly line methods, the Navy Yard not only has been able to cut down its production time but also is launching its ships more completely finished than ever before. One by one the prefabricated sections roll into the yard—deck plates from Florida, bow sections from Virginia and North Carolina, hull structures from South Carolina and Georgia. Within a few months, they can be assembled into fighting ships.

The first two tank landing vessels completed under this vast program were a powerful tribute to nine private manufacturers who poured all their resources and ingenuity into construction work for the Navy. Assembly construction of the two ships proved so successful that even now the program is being expanded to include other types of war vessels that soon will join the fleet in far-flung parts of the world.

The program of pre-fabricating instituted during the construction of the "tank taxis," was developed in order to cope with a manpower shortage and to alleviate limited construction facilities at the Charleston Navy Yard.

Success of this unique shipbuilding plan is attributed almost entirely to the cooperation of the participating manufacturers. The Navy's appreciation was expressed at the launching ceremonies of the two tank landing ships by Captain G. E. Baker, USN, Acting Commandant of the Sixth Naval District and the Charleston Navy Yard.

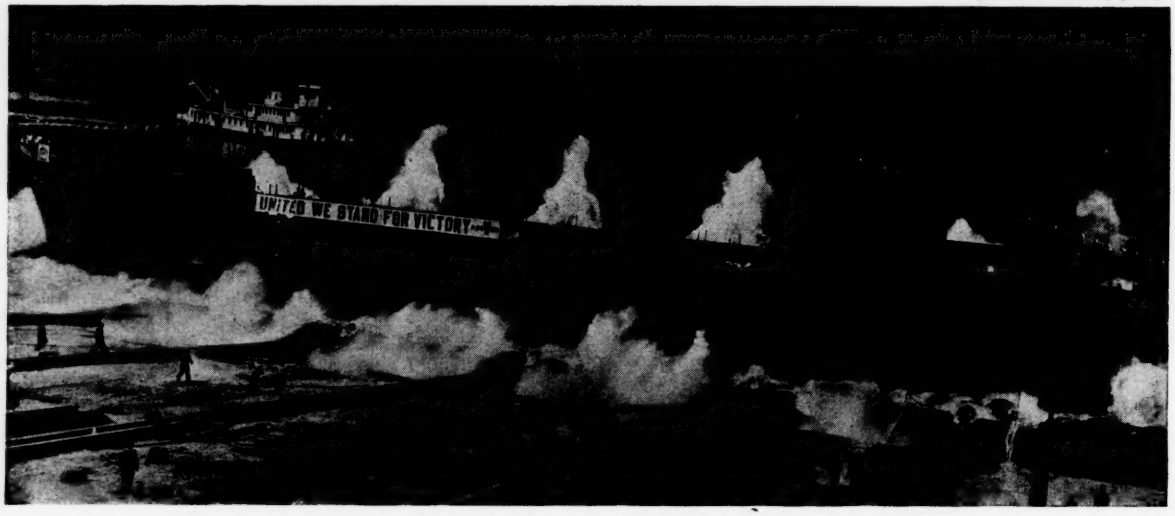
"Although our subcontractors are far from Charleston," he said, "they have played an integral part in fashioning ships of the Navy to seek out and destroy the enemy. Likewise, all of American industry, although remotely located from the scene of action, is a part of the battle in the Pacific, in Egypt and in Russia."

Prior to the emergency, Captain Baker pointed out, "a very substantial portion of a ship" was built at the Charleston Navy Yard itself. "Soon," however, "we found that our limited force was unable to keep apace with the demands of the hour, in spite of a tremendous program of expansion."

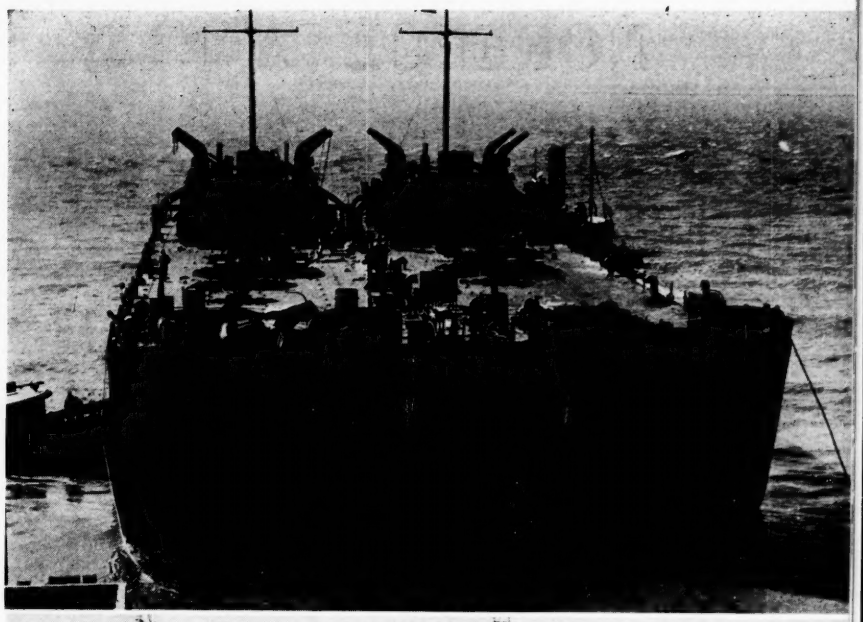
Contracts for huge ship parts were let to nine firms. These firms were the Carolina Steel and Iron Co., at Greensboro, N. C.; Dixie Culvert and Metal Co., at Atlanta, Ga.; South Carolina Steel Fabricating Co., at Columbia, S. C.; the Nashville Bridge Co., at Besse-

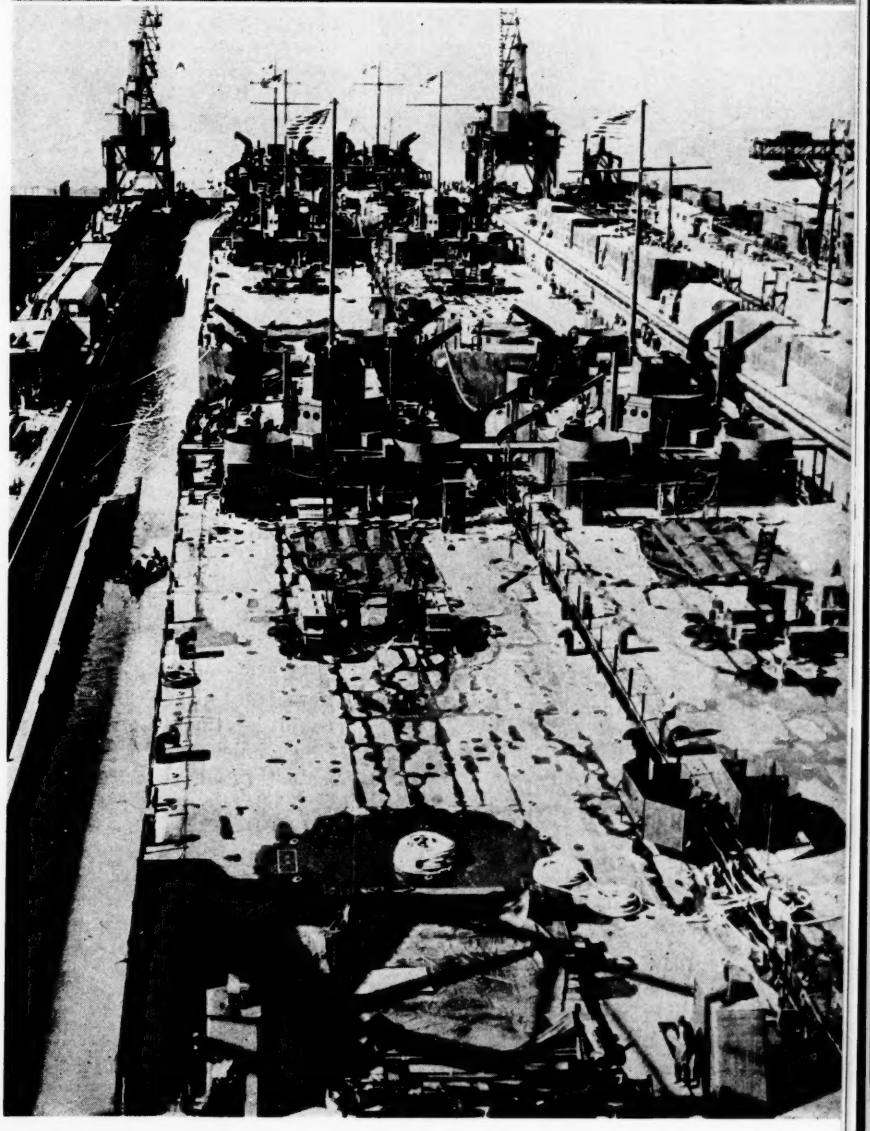
To carry tanks and their crews right into the battle zone, a new U. S. Navy tank lighter is launched at a river shipyard where space determines that the vessel be launched sideways.

[Official U. S. Navy photo]



Top—The first two of six new tank lighters launched recently at a shipbuilding plant in the South are shown as they floated out into the stream from the shipway in which they were built. They are of the class known as LST's. The ships were built to carry U. S. tanks and trucks to the battle areas, under their own power. Each is a complete ship in itself, with quarters for crews and troops to man the land vehicles. Below—Six tank lighters are shown, floating in the ways, shortly before the drydock at the far end of the picture was floated into the stream, and the new ships towed, two by two, to another dock for fitting out.





mer, Ala.; the Virginia Bridge Co., at Roanoke, Va.; Merrill-Stevens Dry Dock and Repair Co., at Jacksonville, Fla.; Greenville Steel and Foundry Co., at Greenville, S. C.; Rock Hill Body Co., at Rock Hill, S. C.; and Montague Machine Co., at Sumter, S. C.

Because of the resulting success of the plan and the close cooperation between the Navy and the subcontractors, Captain Baker said, "now parts of the ship are being fed to the yard from private plants scattered all over the country. The yard is rapidly becoming a vast assembly line. Thus, through the assistance of industry, technical skill of our mechanical force is conserved and the fleet will receive ships from our yard at hitherto unsurpassed rate."

Ships recently launched at the yard were more completely assembled at launching time than any other ship previously built at the Charleston Navy Yard. They had been on the building ways less time than previous ships. This was due entirely to the fact that most of the parts came already assembled and could be welded together on the ways.

Southern Firms Get Wooden Barge Contracts

Contracts for the construction of 35 wooden tugs have been awarded to seven companies including two southern concerns.

The vessels, to be built in connection with the Maritime Commission's barge program, are the first of their type to be constructed by the Commission. On December 8, 106 bids ranging in price from $31,500.00 to $160,000.00 per tug were received. The two firms in the South receiving contracts for the 65-foot tugs were:

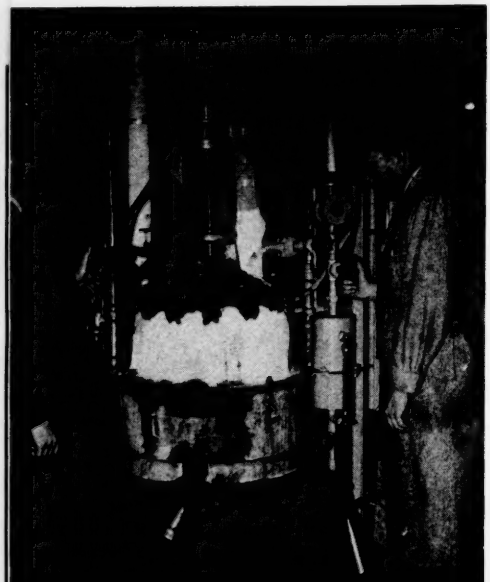
Texas Shipbuilding Co., Houston, Texas: No. of Tugs—6; Price per Tug—$40,697.93.

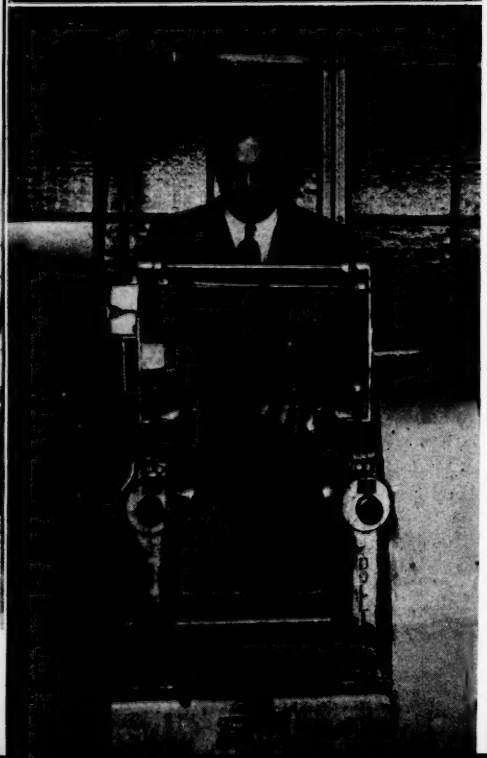
Arlington Shipbuilding & Engineering Corp., Jacksonville, Florida: No. of Tugs—6; Price per Tug—$41,032.00.

NOREPOL, A NEW RUBBER SUBSTITUTE from VEGETABLE OILS

Soybeans are likely source of new product

South's 1942 crop broke all records





THE commercial production of a rubber substitute made from vegetable oils is now an accomplished fact and reliable estimates place the 1943 demand at 24 million pounds.

Norepol, as the new rubber substitute is generally known although two companies have given the product trade names of their own, was first announced about six months ago when the Department of Agriculture found that it was a promising material even on a laboratory scale.

In the Baruch Committee Report on the Rubber Situation, Norepol was referred to as another rubber substitute which is "in an interesting stage of development." The Committee's judgment that this product deserved attention is justified by what has been done in the short time since by several manufacturers. Nearly 100 tons already have been made and passed into consumer hands. Reliable estimates indicate a minimum demand of 12,000 tons in 1943, although it is confidently believed that a much larger tonnage could be turned out each year. The wholehearted cooperation of industry had much to do with the rapid development of Norepol.

Chemists say the process has practically no relationship to the factice process, which also produces a rubberlike substance, except that both use vegetable oils. The factice process, which has long been established, consists principally in treating semi-drying oils with sulfur or reactive compounds of sulfur. In making Norepol, instead of treating the entire oil, from whatever crop it may come, a definite series of chemical reactions is employed during the course of which selected constituents of the oil are used, leaving other constituents as useful byproducts. Essentially, the process consists in the controlled polymerization of the linoleic acid in the oil.

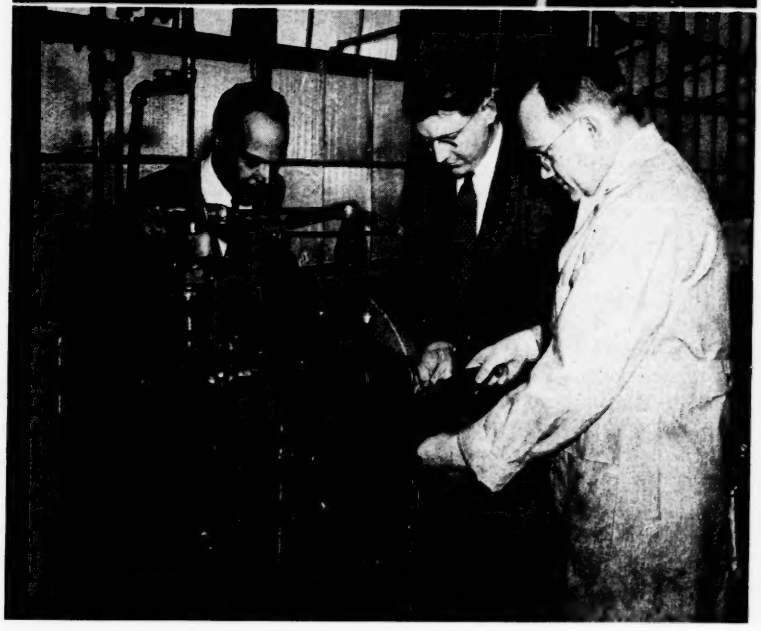
If the process is to employ soy beans or soy bean oil, as has been suggested, though any vegetable oil can be used if it contains linoleic acid, the beans must first be milled to extract the oil (from a bushel of beans which weigh 60 pounds, approximately 9 pounds of oil should be obtained). The oil is then subjected to a series of chemical reactions with the addition of carbon black, sinc dimethyldithicarbamote tetramethyl-thiuramdisulfide and other chemicals which produce the necessary constituents for the actual making of Norepol. In the final analysis, 100 pounds of soybean oil yields approximately 75 pounds of Norepol.

The resultant mixture is then placed in a rubber mill where steel rollers work and mix the material to the proper consistency before emitting the finished product in sheet form.

Norepol is described as having a number of the valuable characteristics of natural rubber in considerable degree, including 200 per cent stretch, tensile strength of 500 pounds to the square inch, and excellent resistance to oxida-

Top — The pilot plant reaction kettle where soybean oil, together with various chemicals, forms the basis of the final rubber substitute, Norepol. Supervising the operation are Dr. R. H. Manley, R. J. Foster and Dr. J. C. Cowan. The picture below shows the milling operation of the product following the reaction kettle process.

Top—This black spongy-like material is what the new rubber substitute looks like before it is milled. Below—Drs. Wheeler, Teeter and Cowan taking a sheet of the rubber material from the pilot plant mill.



tion and to the effects of water and alcohol. Since then, and as a result of tests in the pilot plant and by a number of factories, improvements have been made in the product. In particular, the necessary constituents can now be produced in purer form and there is better control of the polymerization process.

Tests show possibilities for many uses for Norepol, including molded and extruded articles—such as rubber heels, fruit jar rings, tubing, and gasket material. Because of the over-all rubber situation, careful choice must be made among the various possible uses. It is pointed out, however, that this is a rubber substitute and not a natural rubber. Furthermore, its production will be but a small contribution when measured in terms of our total rubber requirements.

A point of much interest, as well as importance, in the over-all economy of wartime is that what is left of vegetable oils after the separation of material for Norepol, can be used by industries that consume vegetable oils to make some of the same products they have been making from the whole oil. Typical examples include glycerol used in making explosives and anti-freeze; and fatty acids used in the manufacture of lubricating greases and soaps.

One of the raw materials for the production of this new product is a plentiful farm crop, the many-sided soybean. The soybean production of nearly 210 million bushels in 1942 was double the 1941 crop and about 6 times the average. The ten million acres that were harvested for beans was 83 per cent above the 1941 production. The South's 1942 production of soybeans broke all previous records. The demand for the beans as a war crop was responsible for this tremendous increase both in acreage and in beans harvested.

The laboratory where this new substitute rubber first saw the light of day is one of four Regional Research Laboratories established by Congress in 1938. When these laboratories were being planned the late Dr. Henry G. Knight, who was chief of that Bureau, and his Associate Dr. W. S. Skinner, the present Chief, insisted on having pilot plant facilities in these laboratories. The wisdom of devoting one-third of the total space in these laboratories to pilot plant research has been proven by this development of a rubber substitute from soybeans, and others—one of the most interesting of which will, it is hoped, be reported in an early issue of the MANUFACTURERS RECORD.

W. J. Sparks, co-inventor of butyl rubber and an expert in polymerization chemistry, blocked out the basic reactions for the production of vegetable oil of the rubberlike product. That was in the autumn of 1939, more than two years before the Pearl Harbor bombing foreshadowed the loss of the United States great source of crude rubber.

(Continued on page 58)

MEMPHIS CELEBRATES ITS INDUSTRIAL GROWTH

Thirty-three new establishments started in 1942

By

ARTHUR M. FIELD
Industrial Engineer,
Memphis Chamber of Commerce

INDUSTRIAL conversion is the keynote of industrial development planning in Memphis today as it has been for the past two years.

Conversion to war production was completed last year. Today, the industrial development program is pointing to reconversion for peacetime manufacture after the War.

Realization that the War had not checked its accelerating industrial growth came to Memphis on January 12 when representatives of 33 new industries and military projects were present at a luncheon given by the Memphis Chamber of Commerce, Memphis Rotary Club and City and County officials. Twenty-four new manufacturers in 1941, and 20 in 1940 were similarly represented—a total of 77 in three years.

The 33 new 1942 establishments included 14 newly created industries or branches of outside plants brought in, eight new military projects and 11 local sales or service organizations which had converted to manufacturing.

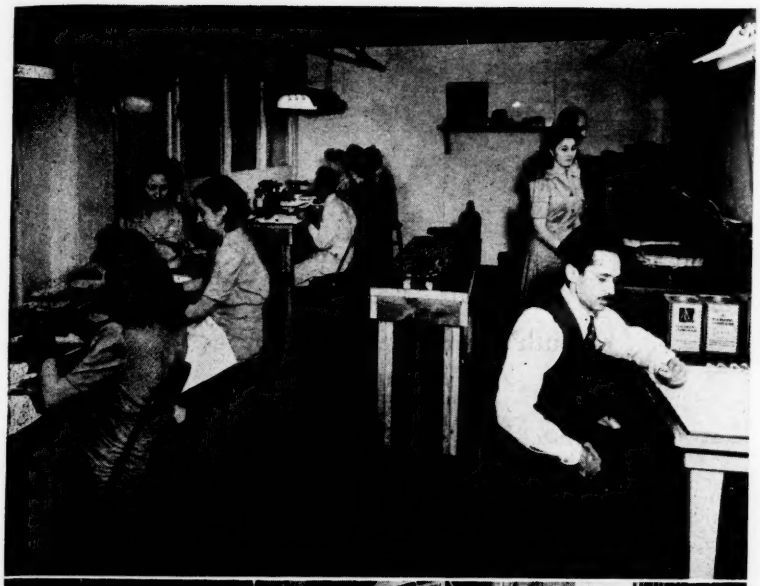
Prior to the War, Memphis had over 550 industrial plants. Although these plants manufactured more than 200 of the 331 classifications of products listed by the U. S. Census, the large bulk of Memphis industrial production consisted of lumber and woodworking products, cottonseed products, foods, cosmetics, sheet metal fabricating and automobile parts. Memphis, lying approximately in the geographical center of the South, with unexcelled transportation facilities by rail, barge, and truck, is also one of the largest distributing centers in the United States.

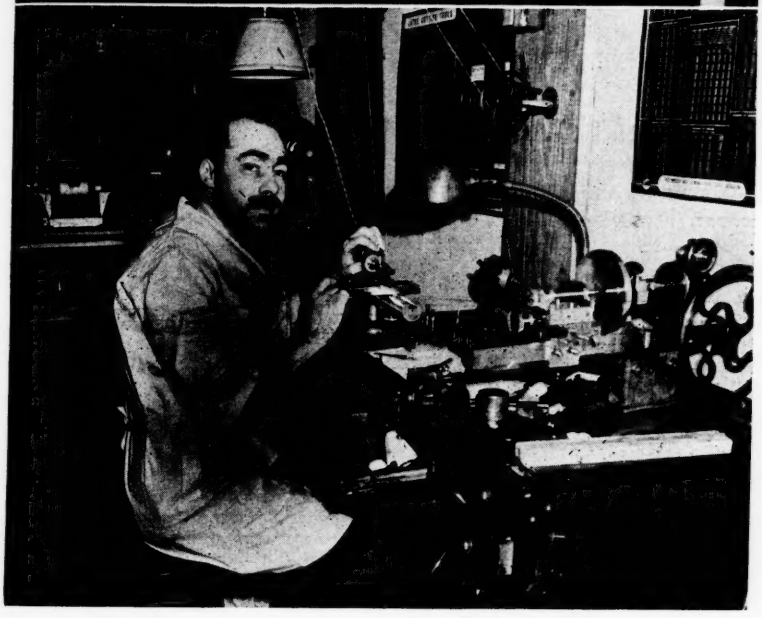
Conversion to war production by existing plants and the development of new plants has further diversified Memphis industry, and of particular importance is the development of production machining shops, tool and die making and heavy metal working. Outstanding among these new developments are the production of steel castings, steel forgings, drop forgings, precision dies, cutting tools, gages, precision welding, and aircraft body fabricating, both in plywood and aluminum. The International Harvester Company acquired a several hundred acre tract of land, where they will erect the largest farm machinery plant in the South when the War is over.

Among the sales or service organizations, such as automobile and appliance dealers, wholesalers, etc., whose existence was threatened by the restriction on normal activities, many of these have done an outstanding job of war production by purchasing new or used machinery and obtaining subcontracts. Memphis was recently cited as one city in which the small businessman had successfully weathered the storm. Practically all of these small plants are now producing bits and pieces profitably, and with satisfaction to the large prime contractors whom they serve.

This war conversion and securing of new War industries did not just happen. Back in 1940, recognizing that war production would probably swallow up a large part of normal business, the businessmen and public officials of Memphis formed a National Defense Committee. Surveys of existing plant facilities and other factors were prepared and presented to every war agency. A campaign of publicity through newspapers, radio, and by other means was carried out to urge local manufacturers to at least hedge their positions by getting some war contracts and converting to war production. That this effort was suc-

View of the luncheon at which representatives of 77 new industries and military projects recently brought to the Memphis metropolitan area were welcomed by city, county and civic groups.





Top—Testing room for the final inspection of precision lenses for binoculars in the new plant of Binswanger & Co. Bottom—A. Graves and Steuwer, retail jewelers and watch repairers, purchased additional equipment and machinery and obtained a contract for precision chronometer parts.

cessful is attested by the few industrial casualties in Memphis.

Today the same group of industrial planners are analyzing the most effective means of converting new war industries, and reconverting existing converted industries, back to peacetime production when the War is over.

That much greater opportunities exist than was the case before the War, is apparent when the list of new products now being manufactured in Memphis is put down on paper. The new facilities for production machining which did not exist before the War, the facilities for making tools and dies, and the availability of drop forgings, steel castings and new metal fabricating provide new local resources for plants using these parts. Two chemical plants, one making furfural, and the other phenol, basic materials for the manufacture of plastics, open a new opportunity in Memphis for this growing industry. The production of fabricated plywood, developed during the War, is certain of further post-War development. The expansion of production activities and physical facilities at the huge Memphis airport points to development in this field. The production of barges in quantities for the Navy points to a post war industry to supply the growing river traffic.

Of the new military projects established as a war measure, the Kennedy General Hospital, the Army Quartermaster Depot, largest of its kind in the country, the Naval Hospital, and several of the Army and Navy schools, it is believed, will be permanent institutions in one form or another.

Huge Water Proof Bag Developed for North African Campaign

A new type of water proof bag, in sizes never before manufactured in quantity for the protection of medical supplies and sensitive radio and electrical equipment during American landing operations in the North African campaign, was designed and developed by Quartermaster Corps technicians working with industrial experts, and manufactured in sufficient quantities for the campaign within a total period of two weeks.

The larger of the bags, which were manufactured in five sizes, measured 26 by 36 by 72 inches and was oblong in shape. It was made of a two-ply sateen fabric, bonded with rubber, and all seams were vulcanized. The open end was fitted with a "throat," 28 inches long which could be gathered up and tied.

Despite the excellent facilities of the plant where the bags were manufactured and the wholehearted cooperation of the management and employees, a number of production problems had to be overcome. A special rubber cement, for bonding the two plies of fabric, had to be developed and procured. Several of the employees developed an allergy to rubber cement and had to be replaced midway of the job. Owing to the size of the bags and the weight of equipment and materials they were designed to hold, it was necessary to attach rope grips or hauling tackle to them, and splice the ends of the ropes into one continuous strand on each bag to eliminate knots.

For nearly two weeks, the facilities of the entire plant were put at the disposal of the Quartermaster Corps, with all commercial work pushed into the background. All employees worked long hours of overtime, but when the work finally got under way, it proceeded so smoothly that bags for the Army were being turned out on schedule and normal operation on commercial work could be partly resumed.

SOUTH'S CONSTRUCTION CONTRACTS RISE IN JANUARY

$132,979,000 total is one-fifth above December

By
S. A. LAUVER
News Editor

SOUTHERN construction during January was valued at $132,979,000, according to reports received by the *Manufacturers Record*. Contrary to expectations, which for some months had forecast a gloomy future for the construction industry during the current twelve months, the January total was almost one-fifth ahead of the figure for the preceding month, thus representing a check in the downward trend of the last months of 1942.

Not only was the January total an encouraging ray shining through the pessimistic prophecies, but the President's budget message to Congress strengthened the prospects for the construction industry, among the largest peacetime users of durable goods. The message contained two items totaling seven billion dollars for proposed construction. Two of the seven will go for industrial construction. The balance is scheduled for other work such as military and naval projects.

As one authority has previously pointed out, the year of 1943 may represent a contraction of construction activities, which because of war necessity have been expanded far beyond what ordinarily would be considered a normal year. Five years ago the almost four billion dollar total for Southern construction in 1942 would have been unbelievable.

South's Construction by Types

	January, 1943		January, 1942	
	Contracts Awarded	Contracts to be Awarded	Contracts Awarded	Contracts to be Awarded
PRIVATE BUILDING				
Assembly (Churches, Theatres, Auditoriums, Fraternal)	$88,000	$760,000	$757,000	$951,000
Commercial (Stores, Restaurants, Filling Stations, Garages)	76,000	560,000	1,142,000	348,000
Residential (Apartments, Hotels, Dwellings)	4,942,000	628,000	8,504,000	3,510,000
Office	10,000	.....	275,000	190,000
	$5,116,000	$1,948,000	$10,678,000	$4,999,000
INDUSTRIAL	$9,624,000	$12,015,000	$37,542,000	$112,067,000
PUBLIC BUILDING				
City, County, State, Federal	$60,074,000	$35,722,000	$60,375,000	$145,392,000
Housing	29,500,000	23,995,000	5,492,000	18,885,000
Schools	1,067,000	1,536,000	3,406,000	6,845,000
	$90,641,000	$61,253,000	$69,273,000	$171,122,000
ENGINEERING				
Dams, Drainage, Earthwork, Airports	$14,959,000	$11,237,000	$41,888,000	$8,016,000
Federal, County, Municipal Electric	190,000	.....	320,000	51,453,000
Sewers and Waterworks	3,484,000	1,697,000	1,384,000	7,087,000
	$18,633,000	$12,934,000	$43,592,000	$66,556,000
ROADS, STREETS AND BRIDGES	$8,965,000	$21,664,000	$4,245,000	$63,191,000
TOTAL	$132,979,000	$109,814,000	$165,330,000	$417,935,000

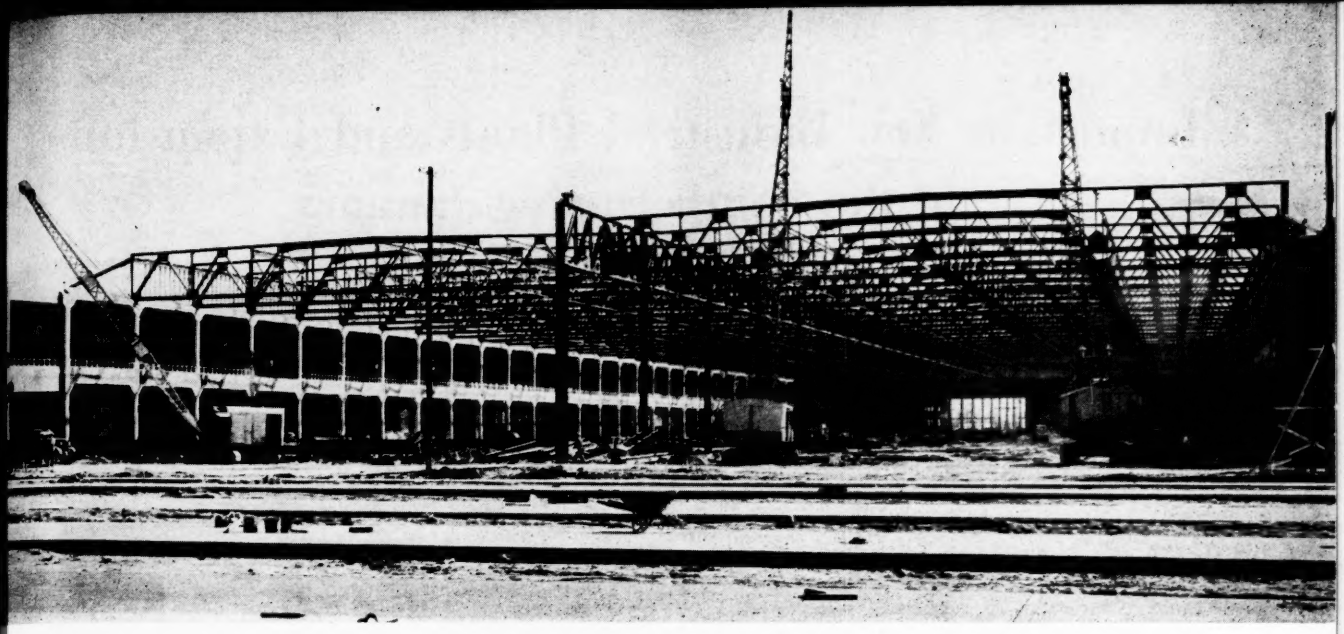
The average for Southern construction contracts during the last half decade is slightly over two billion dollars. In two of those years the Nation was feverishly preparing first for defense; then girding for war—a world wide conflict in which most of the implements for one side, much of the food and many of the men had to be supplied from the resources of the forty-eight States of the Union. Those two years saw Southern construction awards mount to twice the value for the three preceding years.

A study of construction awards in the South during the half decade of peacetime inflation, when the country was experiencing what was then thought to be the heights of prosperity—the five years leading to the financial catastrophe of 1929—shows the yearly average to be much less than one billion dollars.

The President's budget request confirms what already has existed for two years and indicates a continuation of the policy of financing industrial projects with Federal funds, also additional military construction. Industrial plant expansions and additions are expected, rather than entirely new projects. Signs point to further extension of the country's airport system and more facilities to train the men for a growing American aerial

South's Construction by States

	January, 1943		January, 1942	
	Contracts Awarded	Contracts to be Awarded	Contracts Awarded	Contracts to be Awarded
Alabama	$4,440,000	$10,610,000	$2,815,000	$5,940,000
Arkansas	12,201,000	5,626,000	837,000	9,467,000
Dist. of Col.	1,034,000	1,900,000	5,254,000	5,197,000
Florida	16,380,000	9,367,000	13,296,000	8,258,000
Georgia	7,962,000	6,373,000	21,477,000	6,152,000
Kentucky	2,134,000	1,735,000	4,211,000	5,527,000
Louisiana	4,036,000	6,109,000	3,531,000	8,239,000
Maryland	10,955,000	18,272,000	12,962,000	13,566,000
Mississippi	1,681,000	2,620,000	819,000	37,884,000
Missouri	1,249,000	6,345,000	1,306,000	8,144,000
N. Carolina	6,978,000	9,809,000	1,204,000	33,582,000
Oklahoma	2,564,000	970,000	338,000	20,137,000
S. Carolina	4,745,000	1,489,000	3,808,000	19,366,000
Tennessee	15,956,000	7,842,000	26,670,000	56,581,000
Texas	22,558,000	19,830,000	17,341,000	139,368,000
Virginia	17,901,000	832,000	27,497,000	36,920,000
W. Virginia	205,000	85,000	21,964,000	3,607,000
TOTAL	$132,979,000	$109,814,000	$165,330,000	$417,935,000



Curtiss-Wright's new plant in the South has now been completed. There are six main buildings including a manufacturing and assembly structure of reinforced concrete with assembly aisles between. Structural steel for the latter is shown above ensconced between two 2-story buildings. It is designed for normal line load and concentrations imposed by 5-ton cranes installed to facilitate handling parts and sub-assemblies. Albert Kahn Associated Architects and Engineers, Inc., were engineers for the project.

army.

January's statistics confirm this observation. The total for such construction, including a few dam and drainage projects, was $14,959,000 for work below the Mason and Dixon line, or a gain of almost fifty-five per cent. Federal projects for military and naval construction, as well as for housing facilities, also rose.

The total for Government building jumped approximately forty-five per cent in January, compared with the preceding month, to $90,641,000. The largest proportion of this, or $60,074,000 was for Federal building projects concomitant to the war effort but exclusive of industrial; $29,500,000 for war housing and the balance for such government incidentals as educational buildings.

Highway and bridge construction fell. The total of reported contracts for January is $8,965,000. Road construction specialists are turning their talents to the airport projects, as highway revenues continue to fall due to less use of roads because of gasoline and tire rationing. Access roads are now the foremost concern of the State highway departments. The President has asked $40,000,000 for this purpose. Construction by highway maintenance forces, instead of by general contract, is on the increase.

Private building continues to be an anomoly among the various regulations and restrictions specifically designed by Government bureaus to stifle such building to the point of maximum inactivity. While the January total for this type of work was small—but $5,116,000—it had almost held its own as compared with December's $5,205,000 and was well ahead of the two months previous to that. Most of the work was for residential purposes in areas designated as important to the war.

Compared with the same month of the year before, the current January total is down about one-fifth, a small percentage considering the flying start of 1942, which was a banner year with its almost four billion dollar total a peak for all time. The current January figure is also down slightly from that of the camparable month of 1941, another record breaker. It is, however, more than twice the January total of 1940, the year when Southern construction passed the billion dollar mark for the first time.

Industrial

(Including Private Utilities)

January, 1943

	Contracts Awarded	Contracts to be Awarded
Alabama	$1,500,000	$5,070,000
Arkansas	2,090,000	420,000
Dist. of Col.	.....	.....
Florida	325,000	335,000
Georgia	.....	50,000
Kentucky	1,594,000	1,535,000
Louisiana	40,000	220,000
Maryland	413,000	50,000
Mississippi	85,000	300,000
Missouri	884,000	385,000
North Carolina	25,000	790,000
Oklahoma	140,000	350,000
South Carolina	74,000	100,000
Tennessee	823,000	650,000
Texas	1,531,000	1,710,000
Virginia	.....	50,000
West Virginia	100,000	.....
TOTAL	$9,624,000	$12,015,000

Public Building

(City, County, Federal; Housing; Schools)

January, 1943

	Contracts Awarded	Contracts to be Awarded
Alabama	$909,000	$5,105,000
Arkansas	7,385,000	4,575,000
Dist. of Col.	748,000	1,705,000
Florida	9,452,000	8,447,000
Georgia	5,600,000	5,488,000
Kentucky	.....	40,000
Louisiana	2,850,000	1,463,000
Maryland	8,587,000	5,657,000
Mississippi	517,000	1,305,000
Missouri	260,000	3,225,000
North Carolina	5,382,000	3,364,000
Oklahoma	410,000	570,000
South Carolina	4,411,000	1,082,000
Tennessee	14,833,000	6,764,000
Texas	12,207,000	12,062,000
Virginia	17,085,000	401,000
West Virginia	5,000	.....
TOTAL	$90,641,000	$61,253,000

Public Engineering

(Dams, Drainage, Sewers, Waterworks, etc.)

January, 1943

	Contracts Awarded	Contracts to be Awarded
Alabama	$773,000	$ .....
Arkansas	1,018,000	631,000
Dist. of Col	41,000	45,000
Florida	5,403,000	135,000
Georgia	1,530,000	500,000
Kentucky	540,000	60,000
Louisiana	885,000	3,926,000
Maryland	307,000	200,000
Mississippi	859,000	940,000
Missouri	.....	2,485,000
North Carolina	877,000	35,000
Oklahoma	550,000	.....
South Carolina	65,000	157,000
Tennessee	135,000	70,000
Texas	5,303,000	3,564,000
Virginia	347,000	186,000
West Virginia	.....	.....
TOTAL	$18,633,000	$12,934,000

Private Building

(Assembly, Commercial, Residential, Office)

January, 1943

	Contracts Awarded	Contracts to be Awarded
Alabama	$	$35,000
Arkansas	1,708,000	.....
Dist. of Col.	245,000	.....
Florida	285,000	.....
Georgia	.....	85,000
Kentucky	.....	100,000
Louisiana	.....	.....
Maryland	248,000	265,000
Mississippi	220,000	25,000
Missouri	105,000	250,000
North Carolina	.....	120,000
Oklahoma	25,000	.....
South Carolina	.....	50,000
Tennessee	115,000	358,000
Texas	1,840,000	430,000
Virginia	225,000	195,000
West Virginia	100,000	35,000
TOTAL	$5,116,000	$1,948,000

Roads, Streets, Bridges

January, 1943

	Contracts Awarded	Contracts to be Awarded
Alabama	$1,258,000	$400,000
Arkansas	.....	.....
Dist. of Col.	.....	150,000
Florida	915,000	450,000
Georgia	832,000	250,000
Kentucky	.....	.....
Louisiana	261,000	500,000
Maryland	1,400,000	12,100,000
Mississippi	.....	50,000
Missouri	.....	.....
North Carolina	694,000	5,500,000
Oklahoma	1,439,000	50,000
South Carolina	195,000	100,000
Tennessee	50,000	.....
Texas	1,677,000	2,064,000
Virginia	244,000	.....
West Virginia	.....	50,000
TOTAL	$8,965,000	$21,664,000

Important New Industrial Plants and Expansions in the South During January

ALABAMA

Additional facilities — Defense Plant Corp. has authorized increase in contract with Bechtel-McCone-Parsons Corp., Los Angeles, Calif., to provide additional facilities at plant in Alabama costing $1,150,000; increase will result in an over-all commitment of approximately $13,700,000.

BIRMINGHAM — airplane modification plant—Fischbach & Moore, Inc., 1410 H. St., N. W., Washington, D. C., has contract at approximately $1,500,000 for electrification of the $12,500,000 airplane modification plant now under construction adjacent to Birmingham; plant is being built under a Defense Plant Corp. contract and will be operated under contract with the U. S. Army Air Forces under Bechtel-McCone-Parsons Corp. of Los Angeles, Calif.; Merriman and John C. Byrne, engineers for the company.

ARKANSAS

PONCA—zinc mill—A. E. Seabass and Carl Modesitt, Denver, Colo., started work on ore concentrating mill; Cleve Byrd, Harrison, mining engineer in charge.

WILSON — dehydrating plant — McGregor's, Inc., 1071 Union Ave., Memphis, Tenn., constructing a $65,000 dehydrating plant for R. E. L. Wilson Co.; probably in operation by May.

FLORIDA

MIAMI — shop building, etc. — Rodney Miller, Inc., 4220 Ponce de Leon Blvd., Coral Gables, has contract for steel frame shop building, 549 S. W. Second Ave. for Miami Shipbuilding Corp., Theodore C. Buhler, Pres., 615 S. W. 2nd Ave.; Jorgensen & Schreffler, Engrs., 12th Floor News Tower.

KENTUCKY

Additional equipment — Defense Plant Corp., awarded contract to Tube-Turns, Inc., 224 E. Broadway, Louisville, for additional equipment for plant in Kentucky; in excess of $400,000.

Plant facilities—Defense Plant Corp. entered into contract with Andrews Steel Defense Corp., Newport, to provide additional plant facilities in Kentucky; cost $1,000,000.

Increase—Defense Plant Corp. executed contract with Reynolds Metals Co., Louisville, to provide additional plant facilities in Kentucky, at cost in excess of $1,500,000.

Equipment—Defense Plant Corp., increased its contract with Bonds Mill Distilling Co., Lawrenceburg, Ky., to provide equipment for plant in Kentucky.

Plant—Defense Plant Corp. authorized execution of contract with Shawhan Distillery Co., 2101 Central, Kansas City, Mo., to provide equipment for plant in Kentucky.

LEXINGTON—hemp plant—Mason and Hanger Co., 428 Hernando Bldg., has contract for $134,000 hemp plant on Winchester Pike about 12 miles from Lexington; construction of building in charge of Robert Harp, engineer with Mason and Hanger Co.; priorities obtained on materials and equipment; building will be of concrete block; modern, fireproof; designed for receiving and processing of hemp; site contains 58 acres; contract awarded by Commodity Credit Corp., Wallace Ashby, Acting Director, Hemp Division, Washington, D. C.

LOUISIANA

LAFAYETTE—dehydrating plant—Paul Jones & Co. installing equipment in egg dehydrating plant on Jefferson St.; capacity 1000 cases per day.

NEW ORLEANS—levee—Atlas Construction Co., Waxahachie, Tex., has contract for approximately 4,215,000 cu. yds. of earthwork in Mississippi River Levee, New Orleans Levee District.

NEW ORLEANS—cargo plant—Turner Construction Co. local office Michaud, has contract, work starting on proposed new cargo plane plant at Michaud for Higgins Aircraft Corp.; contract signed with Defense Plant Corp.; George F. Shelley, supervising engineer of New Orleans District of DPC, will direct work; Albert Kahn & Associated Architects and Engineers, New Center Bldg., Detroit, Mich., are architects and engineers; previously reported that Raymond Concrete Pile Corp., New York City, had foundation contract.

Contracts Awarded

MARYLAND

BALTIMORE—bin—Consolidated Engineering Co., Inc., 20 E. Franklin St., has contract for bin, Pier 5, Pratt St. for A. H. Bull & Co., Inc.; concrete block and frame.

BALTIMORE — building — August P. Schnabel, 5505 Sefton Ave. has contract for $15,000 building, 6003 Eastern Ave. for Oliver T. Linthicum; 2-story; brick.

BALTIMORE—storage building—Baltimore Contractors, 15 N. Central Ave. has contract for storage building, 708 S. Eden St. for W. H. Killian Co.; concrete and cinder block; 1-story; cost $15,000.

BALTIMORE — factory building, etc. — Morrow Brothers, Inc., 14 E. Eager St., has contract for factory building, No. 3, alterations. Leimbach & Williams, 30 W. Biddle St., has contract for office and women's locker room, Bush & Hamburg Sts., for Koppers Co., American Piston Ring Division.

BALTIMORE—gas tank—Chicago Bridge & Iron Co., Chicago, Ill., has contract for gas tank, 1610 S. Newkirk St. for Standard Oil Co. of New Jersey; cost $15,000.

BALTIMORE—boiler house, etc.—Morrow Brothers, Inc., 14 E. Eager St. has contract for boiler house, Scott & McHenry Sts., for Koppers Company, Bartlett-Hayward Division; brick; 2-story; 30x48 ft.; cost $10,000.

BALTIMORE—addition—F. G. Schenuit Rubber Co., 3901 Clipper Rd. erect addition; brick; 1-story; owner builds; Kubitz & Koenig, Engr., Emerson Tower Bldg.

BALTIMORE—boiler house—Davis Construction Co., 9 W. Chase St. has contract for boiler house, 1655 Warner St. for Gibson & Kirk Co.

BALTIMORE — building — Jackson Construction Co., 13 W. 25th St., has contract for concrete formations, Baltimore County, Sewer Rd., for Eastern Rolling Mill Co.; cost $18,000.

CURTIS BAY — plant — Charles H. Schwertner, 1505 Race St., Philadelphia, Pa., has contract for plant for Air Reduction Sales Corp., J. E. Fricker, Ch. Engr., New York; United Engineers & Constructors, Inc., 1401 Arch St., Philadelphia, Pa., Engrs.; Bethlehem Steel Co., Mercantile Trust Bldg., contract for reinforced steel; Gray Concrete Pipe Co., Eastern Ave. and Gunter St., concrete piping; Walter Sheeley, 3600 Roland Ave., masonry, all Baltimore; Economy Elevator Co., Chicago, Ill., elevator.

FAIRFIELD — acetylene plant — Haverstick & Borthwick Co., Schaff Bldg., Philadelphia, Pa., has contract for acetylene plant for Bethlehem-Fairfield Ship Yard; Brown & Heim, Inc., 815 Park Ave., contract for electric work; Mechanical Engineering Co., 10 E. Center St., plumbing and heating; Fingles Co., 2256 Reisterstown Rd., roofing and sheet metal, all Baltimore.

MISSISSIPPI

PASCAGOULA—cafeteria and market—J. F. Holley, 905 Sixth Ave., N., Birmingham, Ala., has contract for cafeteria and super market building for Ingalls Shipbuilding Corp.; Jack B. Smith, Archt., Martin Bldg., Birmingham, Ala.

MISSOURI

Plant—Defense Plant Corp., announced execution of contract with Woodford Distillery, Inc., St. Louis, to provide equipment for plant in Missouri.

Plant—Defense Plant Corp. announced execution of acquisition agreement for National Distillers for purchase of machinery and equipment at cost of more than $700,000 for plant in Missouri.

ST. LOUIS—addition—Murch Jarvis Co., 705 Olive St., general contractor for factory additions, 4171 Bingham Ave., for Alligator Co. starting work on project; includes brick and reinforced concrete additions; 1 and 2 stories; 73x113 ft. and 25x65 ft.; cost $50,000; A. C. Maack, Archt., care of contractor.

ST. LOUIS—plant—James H. Bright Construction & Building Co., 1259 N. Kingshighway, has contract for building, 3801 Eichelberger for Southern Equipment Co.; 1-story; 74x138 ft.; sheet rock roof.

ST. LOUIS — alterations — International Shoe Co., 1509 Washington Ave., starting work on factory addition and alteration, 1817 Cherokee St.; owner builds; Herbert Reinhardt, 1820 Cherokee St., company's architect.

NORTH CAROLINA

Equipment—Defense Plant Corp. announced award of contract with Broadfoot Iron Works, Wilmington, N. C., to provide equipment for plant in North Carolina.

WINSTON-SALEM — terminal — McLean Trucking Co. has permit to erect truck terminal, garage and warehouse; cost $20,000; 50x300 ft.; brick and concrete; concrete driveways.

OKLAHOMA

BECKETT — garage and warehouse — Jones-Wilkerson Construction Co., Duncan, Okla., has contract for garage and warehouse for U. S. Defense Plant Corp.; Co-Operative Refining Co. and Rock Island Refining Co., lessee; Malcolm McCune, Archt., 1308 Utica, Tulsa.

CUSTER COUNTY—pipe line—Frenchie Welding Co., Shamrock, Tex., has contract for 17½ miles of 6-in. pipe line for Consolidated Gas Utilities Corp., Braniff Bldg., Oklahoma City; work started.

SOUTH CAROLINA

LYMAN—filter plant—C. M. Guest & Sons, Anderson, has contract for filter plant for Pacific Mills, Lyman; cost $130,000 Wiedeman & Singleton, Engrs., C. & S. Bank Bldg., Atlanta, Ga.

TENNESSEE

NASHVILLE—egg drying plant—Swift & Co., 1101 First Ave., N., F. C. Laskey, local manager, establish egg dehydration plant in building, 805-811 Fourth Ave., N.; remodel structure, install machinery; daily capacity of 1200 cases; cost of machinery and improvements to building, $125,000.

NASHVILLE—addition—Tennessee Products Co., American National Bank Bldg., granted additional plant facilities in Nashville by Defense Plant Corp.; overall commitment of $700,000.

NASHVILLE — addition — Capitol City Mattress Co., 902 Main St., erect addition to plant; owner builds.

TEXAS

Plant facilities—Defense Plant Corp. has authorized an increase in contract with Monsanto Chemical Co., St. Louis, Mo., for additional plant facilities in Texas at cost of $2,000,000, resulting in an over-all commitment of approximately $15,000,000.

Pipe line—Sinclair Refining Co., Fort Worth, construct a 26-mile pipe line loop to extend from its Sinco terminal in Houston north to Huffsmith Station; will parallel a 12-in. carrier through which East Texas crude is delivered at company's plant at Houston; loop will tie into a series of 8-in. loops extending northward via Mexia to Oklahoma; Whitaker Construction Co., of Fort Worth, has been awarded contract to lay a 6-mile line from company's Houston tank farm to the Shell Oil Co.'s refinery at Houston; Stanolind Pipe Line Co. has awarded contracts for construction of 3 loops, comprising 75 miles of 8-in. pipe between Mexia in central Texas and Graford in north Texas on its Mexia-Oklahoma trunk carrier; loops will parallel the 10 in. portion of company's line.

DAINGERFIELD — pig iron blast furnaces—Lone Star Steel Corp., John W. Carpenter of Dallas, Pres., received assurance from WPB that the $18,000,000 pig iron blast furnace now under construction at Daingerfield will be completed; company filed an application for constructing at pig iron site of an open hearth steel mill to cost an additional $16,000,000 to $17,000,000; output of pig iron furnaces will be 1200 tons daily.

DALLAS—addition—Defense Plant Corp., authorized contract with North American Aviation, Inc., for additional plant facilities in Texas; over $1,250,000.

DALLAS—egg drying plant—L. E. Arwin, 2106-08 Canton St., has contract for egg drying plant, cost $12,500; S. F. Rubenstein, owner.

GALVESTON—dry dock—W. Horace Williams, Inc., Southern Bldg., New Orleans, La., has contract for dry dock facilities for Todd Dry Dock & Shipbuilding Co., Pelican Spit.

WEST VIRGINIA

Plant facilities—Defense Plant Corp., entered into contract with Demuth Glass Works, Inc., 79 N. 11th St., Brooklyn, N. Y., to provide for additional facilities in West Virginia; cost $100,000.

Contracts Proposed

ALABAMA

BIRMINGHAM—plant—Sterling Distributors, Inc., Montgomery, acquired site for plant—brick; concrete and wood floors; steel foundation.

COOSA COUNTY—tin—Mineral Concentrates Corp. of Rockyford, Ala., will probably receive $20,000 from RFC to explore tin-producing possibilities of clay in Coosa County; Ralph Lewis of Rockyford, is president of company; later may erect plant.

ARKANSAS

CALAMINE — mining — Government approved a development loan for Bettis, Ford & Fulks of Pleasant Grove, operators of mine near Calamine, Sharp County; 335 acres; ore is zinc sulphide.

HARRISON—stockyards—Dr. V. D. Herrington, Pryor, Okla., construct stock yards, chutes for loading, etc.

YELLVILLE—zinc mine—Silver Hollow Mining Co. has development loan for mine on Buffalo River, in Rush district; will require about 2 months to straighten out main tunnel, build holster house, tramway, camp house and install equipment; ore will be milled at Edith mill.

FLORIDA

HAVANA — dehydrating plant — Havana Canning Co. convert present facilities for dehydrating plant for fruit and vegetables.

GEORGIA

ATLANTA—building—Southern Railway System, Washington, D. C., received bids Jan. 11 for building; 1-story; 170x80 ft.; concrete foundation; masonry walls; built-up roof; following are estimators: Flagler Co., 305 Techwood Drive, N. W.; Ralph W. Didschunelt, Candler Bldg., both Atlanta; Southeastern Construction Co., 218 W. Second St., Charlotte, N. C.

KENTUCKY

Factory—Ken-Rad Tube & Lamp Corp., 316 E. Ninth St., Owensboro, Ky., plans establishment of plant to manufacture radio and other equipment at site in Kentucky.

WINCHESTER—hemp plant—U. S. Department of Agriculture, Commodity Credit Corp., S. H. McCrory, Director of Hemp Division, received bids Jan. 9 for hemp mill.

LOUISIANA

Cable—Bass-Harless Lumber Co., Inc., Lake Charles, applied for War Department permit to install cables across Mermentau River in Jefferson Davis and Vermillion Parishes.

Aerial crossings—Louisiana Power & Light Co., New Orleans, applied for War Department permit to install and maintain 2 aerial crossings for electric power transmission lines, over and across Bayou Des Allemands and Bayou Lafourche.

NEW ORLEANS—shop buildings—C. A. Haynes, Todd Shipyards Corp., 1 Broadway, New York, receives bids Feb. 1, change of date, for dismantling plate shop in West Virginia and re-erecting, altering and constructing same together with yard work involving new buildings and over head crane at Algiers; Kelly, Syska & Hennessy, Archts. and Engrs., 144 E. 39th St., New York.

NEW ORLEANS — plant — Consolidated Aircraft Corp., San Diego, Calif., acquired plant in New Orleans for manufacture navy planes; Capt. William Nelson, appointed acting division manager of proposed plant.

SLIDELL—transmission line—Louisiana Public Utilities Co., Inc., Lafayette, applied for War Department permit to install an aerial crossing for electric power transmission lines, over and across Bayou Bonfouca.

VILLE PLATTE—carbon black plant—Cabot Carbon Co., Boston, Mass., will begin construction in about 60 days on carbon black plant in oil field here; entire output will go into manufacture of synthetic rubber; furnace type; Reno Stinson, assistant district superintendent for Cabot Carbon Co.

MARYLAND

BALTIMORE — expansion — Woodcraft Toy Manufacturers, Inc., 901 S. Carey St., acquired 7 acre site north of Wilkens Ave. and south of Frederick Rd. for future expansion.

MISSOURI

Federal District Judge George H. Moore granted to Guy M. Thompson, St. Louis, Mo., trustee of Missouri Pacific Lines and its subsidiaries, authority to spend during 1943 a total of $8,543,345 on improvements to roads and equipment; largest amount, $7,213,830 allotted to Missouri Pacific and certain subsidiaries; with $1,814,600 authorized in March a total of $9,028,430 is scheduled to be expended, as follows: Missouri Pacific, $8,578,955; Missouri Pacific of Nebraska, $270,850; Chester and Mt. Vernon, $44,300; Cairo and Theves, $4,300; New Orleans and Lower Coast, $111,775; Union Railway (Memphis) $18,250; next largest amount was allotted New Orleans, Texas Mexico Rd. and subsidiaries, $693,765, that total and $339,250 authorized March 13, will be spent as follows: International & Great Northern, $530,820, which with $337,430 allocated in March, brings total to $868,250; Missouri and Illinois allowed $124,930.

ST. LOUIS—addition—Neidt Realty Co., A. E. Neidt, Pres., care of Steelcote Manufacturing Co., 3418 Gratiot St., acquired site, north of Chouteau and east of Theresa Ave. for additional warehouse and factory addition.

ST. LOUIS—plant—Joshua Hendy Iron Works, Sunnyvale, Calif., acquired plant of Pomona Pump Co., 4301 S. Spring Ave.; will be operated as a division of the Henry company.

ST. LOUIS—plant—Millner Co., 3110 N. Eleventh St., acquired factory building, 1308-10 N. 16th St.; make alterations and occupy as manufacturers of passenger and freight elevators.

NORTH CAROLINA

Shipyard—Ernest and Archie Saunders operating the Elizabeth City Shipbuilding Co. will establish new shipyard on the Pamlico River.

Dayton Rubber Manufacturing Co., 2130 Dilworth Rd., W., Charlotte, N. C., H. McA. Rose, local manager, main office of company, 2345 Riverview Ave., Dayton, Ohio, and 6 additional companies have formed a new company, known as Copolmyer Corp., with A. L. Freedlander, Pres. to build and operate a plant for manufacture of synthetic rubber; city of Charlotte, under consideration for location of proposed plant; Copolymer Corp., recently noted to start work soon on proposed plant in Louisiana.

CHARLOTTE—building—Gittlin Bag Co., local office S. Graham St., main office, Newark, N. J., acquired building, 1000 W. Palmer St.

CHARLOTTE—building—W. T. Anderson Co., acquired building, E. Fifth and N. Brevard Sts.; will be used as headquarters for company; remodel.

OKLAHOMA

TULSA — plant — Manning, Maxwell & Moore establish plant at 13th Place, Lewis and Katy tracks, for manufacture oil field gauges.

SOUTH CAROLINA

CAMDEN—dehydration plant—Newkirk, Inc., construct dehydration plant in connection with canning plant.

COLUMBIA—dehydration plants—Hinson Food Products Co., construct dehydration plant in connection with canning plant.

TENNESSEE

JACKSON—storage sheds—Jackson Clay Co. soon call for bids for clay storage sheds at mines near Gleason.

MEMPHIS — dehydrating plant — M. T. Topping, Ashland, Ohio, and John Lyerly, have tentative plans for erection of food dehydration plant at estimated cost of $25,000; application for steel and other critical materials made to WPB; several sites under consideration.

TEXAS

Pipe line—War Production Board approved allocation of materials for construction of 836 mile pipe line from Beaumont-Houston petroleum refining area to Seymour, Ind., to augment flow of petroleum products into the East; probable cost $44,000,000; completion by Sept. 1; from Little Rock, Ark. to the vicinity of Seymour the line will follow approximately the same route as the 24-in. war emergency pipe line from Longview, Tex. to Norris City, Ill.; line will be built by War Emergency Pipe Lines, Inc.; section approved requires an estimated 164,000 tons of steel and pumping equipment capable of generating 55,000 h.p.; later the line may be extended 675 miles from Seymour to the New York-Philadelphia area; capacity of new pipe line estimated at 235,000 bbls. daily.

GALVESTON — wharf — Gray's Iron Works, 1901 Water St. plans constructing wharf and dolphins on Galveston channel east of company's shipyard launchingways

(*Continued on page 56*)

War Contracts and Allocations to Southern States Near $19,000,000,000 Through November, 1942

War contracts and allocations distributed by Federal agencies and foreign purchasing missions to the southern states for the period through November 1942 totaled approximately $18,816,130,000. This represents a gain of $967,574,000 during the two-month period of October and November. United States contracts date only from June 1, 1940, but the foreign contracts started in September, 1939. Included in the United States total of $114,179,955,000 is $12,283,662,000 for contracts executed outside this country and for such contracts as are not yet assigned to a particular state. Awards for the Army, Navy, Maritime Commission, Treasury Department and foreign purchasing missions do not include those having a value of less than $50,000 nor do they include contracts for foodstuffs.

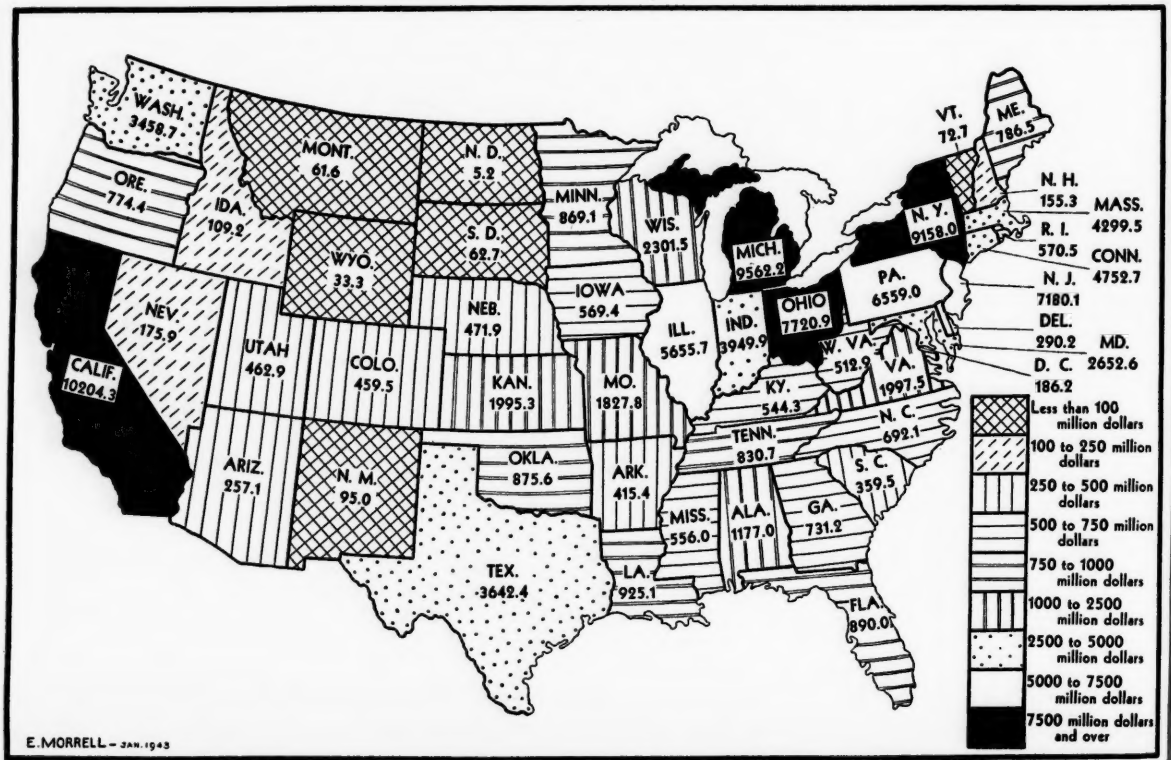
Major War Supply and Facility Contracts and Allocations, June, 1940 Through November, 1942

(Thousands of dollars)

	Army, Navy and Maritime Commission Supply Contracts			Facilities		Dept. of Commerce	Dept. of Agriculture	Federal Works	Federal Security	Federal Security Agency	
	Aircraft	Ships	Miscell.	Industrial	Non-Industrial	C.A.A.	F.P.H.A.	Agency	Agency	R.F.C.	Total
Alabama	.....	270,098	278,054	380,262	139,283	1,270	74,320	18,874	8,177	6,619	1,176,957
Arkansas	.....	.....	51,981	220,331	117,100	563	16,052	4,358	4,327	667	415,379
Dist. of Col.	.....	324	4,567	19,426	41,567	....	82,426	11,173	1,502	25,167	186,152
Florida	950	297,900	46,899	51,473	413,206	7,246	25,076	32,112	6,480	8,619	889,961
Georgia	409	149,638	234,029	97,451	187,767	5,047	32,621	12,752	8,342	3,095	731,151
Kentucky	32,556	.....	97,242	197,950	147,480	1,720	8,986	10,563	7,015	40,770	544,282
Louisiana	68,496	137,738	65,375	337,545	237,752	5,827	7,823	15,506	6,081	42,978	925,121
Maryland	1,223,318	363,116	588,524	202,210	171,703	....	68,446	14,329	4,539	16,403	2,652,588
Mississippi	180	219,285	60,525	59,212	184,467	1,430	14,088	10,106	6,303	382	555,978
Missouri	155,032	157,016	837,906	505,267	129,312	310	15,158	14,925	6,926	5,994	1,827,846
North Carolina ..	19,468	97,874	255,546	40,707	222,823	587	30,768	16,602	7,076	678	692,129
Oklahoma	385,819	.....	67,848	186,205	211,718	1,840	5,100	8,926	7,546	601	875,603
South Carolina ..	.....	25,233	132,925	39,727	105,132	3,674	23,951	24,675	4,068	140	359,525
Tennessee	94,723	13,891	255,486	262,428	177,640	690	8,591	8,719	6,951	1,628	830,747
Texas	694,827	845,721	338,329	855,606	766,932	9,710	67,528	40,749	16,769	6,197	3,642,368
Virginia	623	989,543	127,401	204,145	500,879	144	133,745	32,743	6,037	2,197	1,997,457
West Virginia ...	.....	86,053	152,254	249,041	1,695	....	11,259	4,846	7,484	254	512,886
South	2,676,401	3,653,430	3,594,891	3,908,986	3,756,456	40,058	625,938	281,958	115,623	162,389	18,816,130
United States ..	26,761,906	16,454,202	41,762,220	14,636,206	10,566,656	97,059	1,757,231	684,494	365,506	1,094,475	114,179,955

"Aircraft" includes contracts for airframes; airplane engines, propellers, and other parts; and certain related equipment such as parachutes and aircraft pontoons, armament, instruments, and communication equipment are excluded. "Ships" include contracts for the construction of new vessels of all kinds; the purchase of used ships; and ship conversion, recommissioning, and repair. Propulsion machinery (when separately contracted for), armor, armament, navigation and radio equipment, parts, and materials are excluded.

The total value of war contracts and allocations by all Federal agencies and foreign purchasing missions was $114,179,955,000 ***for the period September*** 1939 ***through November*** 1942. ***Southern states received*** $18,816,130,000 ***of this sum. Each state's share in millions of dollars is shown in the map below.***



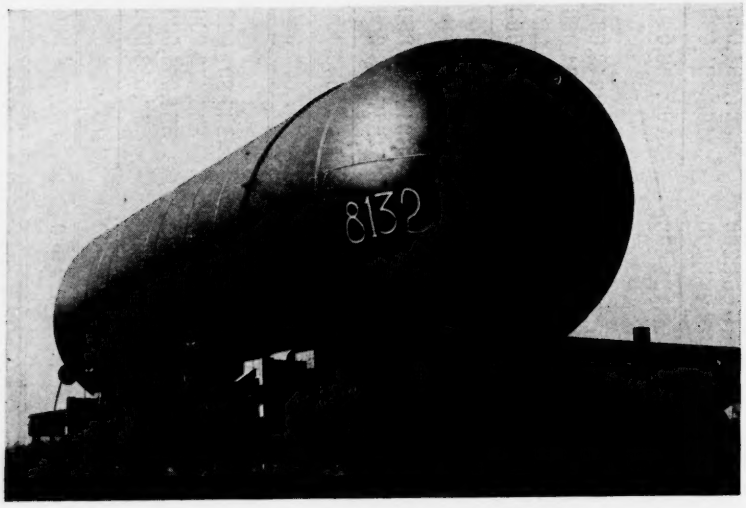
UNITED STATES LEND-LEASE

UNITED STATES LEND-LEASE

FROM MARCH 1941 THROUGH DECEMBER 31, 1942

Type of Aid	United Kingdom	Australia, New Zealand, India, Other British Territories, Egypt	U. S. S. R.	China	Other	Total
GOODS TRANSFERRED						
MILITARY ITEMS:						
Ordnance	$147,534,000	$130,307,000	$39,639,000	$14,661,000	$41,867,000	$374,008,000
Ammunition	196,288,000	303,172,000	148,288,000	19,491,000	14,783,000	682,022,000
Aircraft and Parts	344,188,000	483,188,000	318,969,000	37,336,000	15,119,000	1,198,800,000
Tanks and Parts	60,298,000	255,400,000	210,305,000	922,000	8,790,000	535,715,000
Motor Vehicles	55,465,000	127,588,000	139,136,000	25,453,000	6,664,000	354,306,000
Watercraft and Parts	285,112,000	90,035,000	15,549,000	447,000	6,651,000	397,794,000
Miscellaneous	82,773,000	30,926,000	39,816,000	7,025,000	6,281,000	166,821,000
TOTAL	$1,171,658,000	$1,420,616,000	$911,702,000	$105,335,000	$100,155,000	$3,709,466,000
INDUSTRIAL MATERIALS:						
Machinery	141,369,000	74,792,000	62,001,000	3,603,000	183,000	281,948,000
Metals	251,673,000	131,390,000	113,909,000	8,975,000	617,000	506,564,000
Petroleum Products	252,862,000	62,427,000	14,806,000	3,237,000	5,000	333,337,000
Miscellaneous	269,676,000	100,758,000	56,224,000	5,110,000	17,043,000	448,811,000
TOTAL	$915,580,000	$369,367,000	$246,940,000	$20,925,000	$17,848,000	$1,570,660,000
AGRICULTURAL PRODUCTS:						
Foodstuffs	880,891,000	56,227,000	101,869,000	.....	1,553,000	1,040,540,000
Miscellaneous	211,778,000	14,722,000	513,000	.....	.....	227,013,000
TOTAL	$1,092,669,000	$70,949,000	$102,382,000	.....	$1,553,000	$1,267,553,000
TOTAL GOODS	$3,179,907,000	$1,860,932,000	$1,261,024,000	$126,260,000	$119,556,000	$6,547,679,000
SERVICES RENDERED						
Ship Repairs, Etc.	$152,975,000	$80,932,000	$27,656,000	$951,000	$3,383,000	$265,897,000
Shipping	429,785,000	227,379,000	106,160,000	13,057,000	59,098,000	835,479,000
Production Facilities	175,085,000	212,206,000	136,300,000	15,514,000	14,960,000	554,065,000
Miscellaneous	22,198,000	11,744,000	1,090,000	956,000	13,625,000	49,613,000
TOTAL SERVICES	$780,043,000	$532,261,000	$271,206,000	$30,478,000	$91,066,000	$1,705,054,000
TOTAL LEND-LEASE AID	$3,959,950,000	$2,393,193,000	$1,532,230,000	$156,738,000	$210,622,000	$8,252,733,000

Certain transfer totals include small amounts of goods diverted to United States armed forces after lend-lease transfer, but subject to future replacement.



This is one of two pressure vessels recently fabricated by the Chicago Bridge and Iron Company at their Birmingham, Ala., plant for an ordnance plant located in Tennessee. Stress relieved before shipment, the bullet-shaped vessels each measure 10 ft. 5½ in. in diameter by 40 ft. 9 in. in length. They will be used for the storage of anhydrous ammonia.

New 20-inch Pipeline to Be Started in March

Construction of a second big oil pipeline to boost movement to the East Coast—an 836-mile, 20-inch conduit designed to deliver 235,000 barrels of petroleum products daily from Texas to tank car loading points in Illinois and Indiana is scheduled to start in March.

If work starts and proceeds on schedule, and if there are no interruptions to the flow of construction materials, the line can be completed on or about September 1.

Upon completion of the details, the Defense Plant Corporation, a subsidiary of the Reconstruction Finance Corporation will be requested to finance the project, which will be built for the Government by War Emergency Pipelines, Inc. The estimated cost is $44,000,000.

The line will deliver light petroleum products from refineries in the Beaumont-Houston area of Texas to tank car loading terminals at Norris City, Illinois, and Seymour, Indiana. Its operation will result in a net additional delivery by tank car of 110,000 barrels of petroleum products daily to Eastern Seaboard consumption and export centers. This additional delivery represents the difference in effective delivery rate that can be secured by shuttling tank cars on the shorter route between Midwest terminals and the East Coast as compared with the rate possible by using the same cars over the longer-haul run between Texas loading points and the East Coast.

Citing the fact that more than half of the new pipeline will be laid along the same right-of-way already traversed by the 24-inch War Emergency Pipeline and thus save thousands of dollars in construction costs as well as many weeks of preliminary labor, Deputy Petroleum Administrator Ralph K. Davies said:

"The line will link the principal Texas refining area with the most effective Midwest junctions for tank-car trans-shipments to the East. These tank car loading terminals, now under construction at Norris City and to be constructed soon at Seymour will be used for lifting War Emergency pipeline deliveries until the extension of that line is completed through to the East Coast next June. They will then be available for similar service in connection with the new products pipeline pending later determination of the feasibility of extending this line all the way to Eastern terminals.

Plans call for the use of 20-inch seamless steel pipe on the main 836-mile section of the pipeline but welded pipe will be installed if deliveries of seamless tube cannot be secured in adequate quantity to maintain uninterrupted construction.

Eighty-three miles of 16-inch pipe will be laid as a feed from Houston to Beaumont and 32 miles of 10¾-inch pipe will be laid as another feeder line from Port Arthur to Beaumont. Thirty-four miles of second-hand 8⅝-inch pipe will be laid as refinery tie-ins near Baytown and Texas City.

Sixteen pumping stations equipped with a total of 44 motors and pumps capable of producing 55,000 horsepower will be installed to maintain the 235,000 barrel-a-day flow between Houston and Beaumont, Texas, and Seymour, Indiana.

A decision with respect to the feasibility of extending the new 20-inch line to the East Coast is expected to be made on the basis of a supplementary report by the Petroleum Administration for War on or about May 1, 1943.

Florida Firm Takes Over A Georgia Shipyard

An arrangement between the Brunswick Marine Construction Corporation of Brunswick, Georgia, and the J. A. Jones Construction Co., Inc., of Panama City, Florida, whereby the Jones Company will take over management of Liberty ship construction work being done in one of the Brunswick yards has been approved by the Maritime Commission. The arrangement is effective February 1.

The Brunswick Company will retain an interest in the Liberty ship contract and continue active management of its other shipyard at Brunswick in which tugs are being built for the Commission.

The Brunswick and Jones Companies were awarded contracts to build Liberty ships in March and April of 1942. Both have six-way yards and each has completed construction of facilities. Ships are under construction on all twelve ways.

The Jones Company now takes over responsibility for the construction of 63 Liberty ships, 33 in the Panama City yard and 30 at Brunswick.

Froehling and Robertson Changes

The well-known firm of Froehling & Robertson, Inc., Inspection Engineers and Chemists, Richmond, Va., announce the following changes in their organization:

Edward C. Doyle, manager of the Norfolk branch for a number of years has been transferred to the Richmond Laboratory and placed in charge of the Inspection Department covering cement and concrete. Mr. Doyle is a graduate of the Citadel in 1927 with a degree from the Civil Engineering Department, and has been with Froehling & Robertson, Inc. since that time.

J. Ira Thomason, Jr., was transferred from the Spartanburg residency to managership of the Norfolk branch succeeding Mr. Doyle. Mr. Thomason graduated from North Carolina State College in 1927 with a degree in Civil Engineering and has been with the company since that date.

Airplane Engine Production

1. An Airplane engine is torn down after it has gone through a gruelling test.

2. All the parts of the engine are then spread out for minute inspection. After the checkup the engine will be reassembled and sent on for final inspection.

3. An engine has been assembled, tested, torn down, subjected to minute examination of all parts and then reassembled. It is now getting a bath before final inspection.

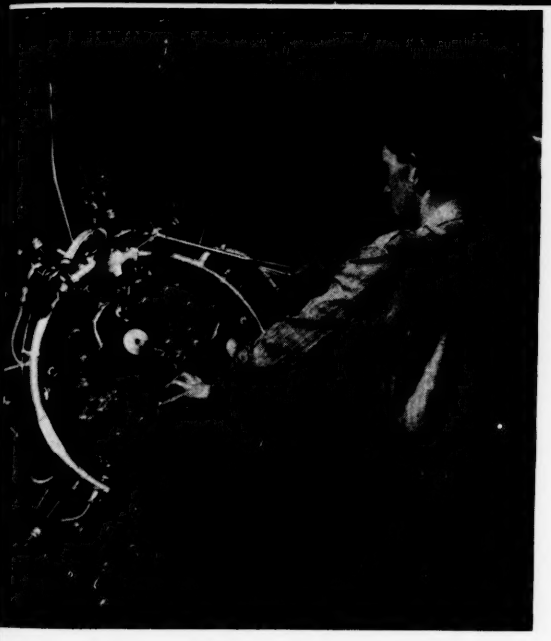
4. Getting an engine ready for its final tests and inspection, before shipment to an airplane factory.

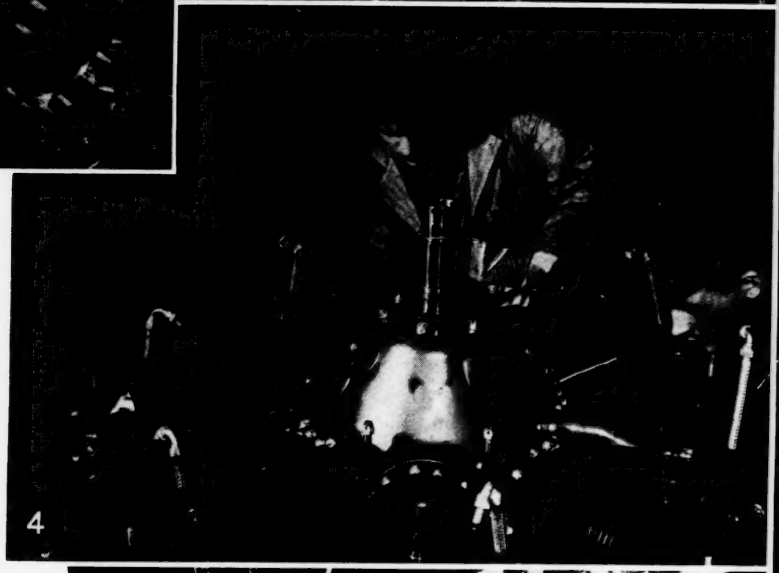
5. Airplane engines assembled and ready for testing.

6. An engine on the test block.

7. An engine undergoing special tests in a secluded and carefully guarded woodland area near an engine plant. If the engine meets the exacting requirements imposed by the testing engineers it will yield valuable technical data that will influence the construction of other engines.

2

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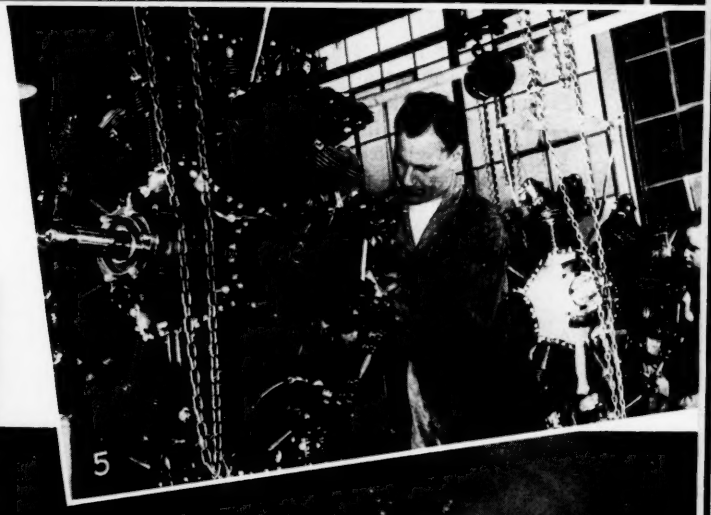
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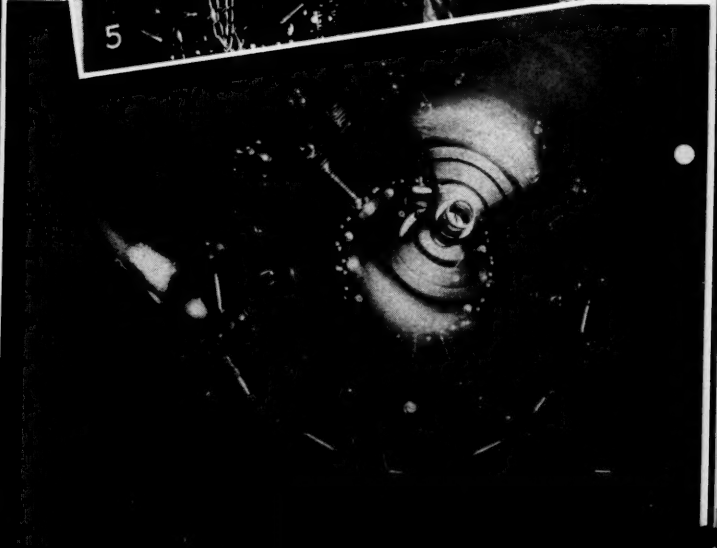


100 Years of STEEL-SERVICE

ONE hundred years ago an "iron store" was established in a country town—the beginning of an organization which is celebrating its centennial as America's largest Steel-Service organization, Joseph T. Ryerson & Son, Inc. It was in 1842 that the founder of the firm, Joseph T. Ryerson went from Pittsburgh to Chicago and started his small "Pittsburgh Iron Store" on the banks of the Chicago River. In the years that followed, the Ryerson organization grew from a small iron store in muddy pre-railroad Chicago to a nation-wide service with ten key-city plants that measure floor space in acres, spur trackage in miles, and annual shipments in the many thousands of tons.

Ryerson Family of Iron-Makers

Even in 1842 the name "Ryerson" was no stranger to the iron business. Back in 1750, members of the Ryerson family were developing ore deposits in northern New Jersey — making pig iron from ore found on property owned by a syndicate, of which George Ryerson was a member. During the Revolutionary War, Ryerson mines and forges furnished some of the iron used in the famous chain which blockaded the Hudson River at West Point.

Today, the ten Ryerson plants will normally carry in stock thousands of tons of steel in more than 11,000 different kinds, shapes and sizes, although the stocks are much smaller at present because industry in making its quick change-over from peace to war production has had to have great quantities over night.

Chicago was growing . . . and so was the Ryerson business. Within six months of the opening of the first store, new and larger quarters were rented. And just two years from the founding of his business venture, Joseph T. Ryerson leased property and erected a two-story brick warehouse in what is now Chicago's Loop, where he added to his stock of nuts, bolts, strap, bar and sheet iron by installing a line of hardware. By 1852—Chicago had grown in ten years from 6,000 to more than 30,000 population—another expansion came and Ryerson purchased a dock site on which is now Chicago's Wacker Drive. After the Chicago Fire which destroyed this property a new three-story building with larger space was built north of the Chicago River on Milwaukee Avenue.

From a small "iron store" beginning has come, in 100 years, this huge steel-service plant covering five city blocks in Chicago. This is the largest of Ryerson's ten plants.

Advances in Steel Industry

The increasing tempo of the steel industry brought about the incorporation of the business in 1888 as Joseph T. Ryerson & Son, Inc., under Joseph T. Ryerson's son, Edward L. Ryerson. A few years later the company moved to a tract covering about 21 acres at 16th and Rockwell Streets, its present Chicago location.

The Ryerson problem in the eighties and nineties, and the early years of the twentieth century was two-fold; to keep up with the rapidly increasing demand for greater quantities of steel, and to keep pace with industry in its requirements for more kinds of steel, better steel. As different kinds of steel were produced, or some manufacturer required a special steel to do a different job, it was the company policy to have that steel in stock. By maintaining a close contact with both the makers and users of steel, the Ryerson business progressed to the point where the stock of steel carried at the Chicago plant in 1916 was greater than the combined warehouse stocks of any other three cities in America. It was then that Ryerson, serving customers throughout the nation, decided to branch out geographically.

In 1914, the W. G. Hagar Iron Company of St. Louis was purchased and additional warehouse space was soon built. This first branch plant became the forerunner of a city-by-city expansion which was to continue for 11 years —Jersey City in 1915, Detroit in 1916, Buffalo in 1919, Cincinnati in 1923, Milwaukee in 1924, Boston in 1926, Cleveland in 1927, and Philadelphia in 1929—a system of ten strategically located plants.

Essential to War Industries

As the largest steel-service organization, Ryerson has naturally

(Continued on page 56)

Telephone wire coming up

Here's a bomber-gunner hurrying to load his 50-calibre gun. . . .

In peace, a lot of that copper would have gone into new telephone lines. Now it's needed for shooting and winning the war.

That's why we can't build new lines right now. That's why we're saying —"Please don't place Long Distance calls to war-busy centers unless it's absolutely necessary."

Thanks for all your help and we hope you will keep remembering.

BELL TELEPHONE SYSTEM

WAR CALLS COME FIRST

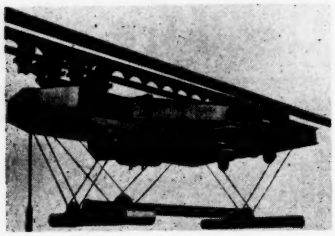
COPYRIGHT ARMY AIR FORCES AID SOCIETY

New Methods and Equipment

Stabilized Tramrail Carrier

A new Stabilized Tramrail Carrier that solves one of the oldest problems in hoisting, that of suspending a load rigidly with the use of the usual flexible hoisting ropes is announced by the Cleveland Tramrail Division of The Cleveland Crane & Engineering Co. By a simple patented arrangement of the ropes to form a triangular suspension, a load can be held rigidly in place so as to eliminate longitudinal, lateral and rotational sway. The rope angles have a definite relation to one another and have been worked out according to a mathematical formula.

The stabilized carrier may be operated on two standard Cleveland Tramrails or



on a double girder Tramrail crane bridge. It also may be operated on the regular type overhead Cleveland Tramrail rail on each side of which are provided parallel flat rails or I-beams for the support of stabilizing rollers attached to the carrier. It is claimed to offer possibilities for many applications including the following: mass production of aircraft on a straight-line production basis; spray-painting large planes by painters on platforms carried by stabilized carriers; delivering hot metal from cupolas to molds; inodizing, chromidizing, salt bath heat treating and other tank operations; supporting welding equipment for applying long continuous welds automatically; welding positioner; and handling X-ray equipment used for inspecting welds.

Shockproof Safety Extension Light

A new safety extension light which is said to be absolutely safe against electric shock, even when the guard is removed, is announced by the Davis Emergency Equipment Company, 45 Halleck Street, Newark, New Jersey.

The light which has a guard of heavy fibre and a new type of spring contact, is so designed that the guard serves as the on-and-off switch. When it is unscrewed the current is automatically cut off. Made of indestructible materials to eliminate the need for repairs and replacements, the entire device is made of non-conductive materials.

Aluminum-Coated Steel Sheets

A new specialty sheet metal, Armco Aluminized Steel, is an aluminum-coated steel developed by the American Rolling Mill Co., Middletown, Ohio, for use in products requiring exceptional resistance of heat and corrosion and combines the surface advantages of aluminum with the strength of steel. Armco aluminized is said to resist heat discoloration up to 1000° F., and will withstand severe oxidation at even higher temperatures. It may be painted but in most cases the coated surface is satisfactory. After the war it will be available in a finish that can be buffed to bright luster.

The aluminum coating clings firmly in moderate drawing and forming operations. In tensile strength, yield, impact and fatigue strength this product has the same values as its low-carbon or copper-bearing steel base. It is available in sheets or coils within gage limits 14 to 28.

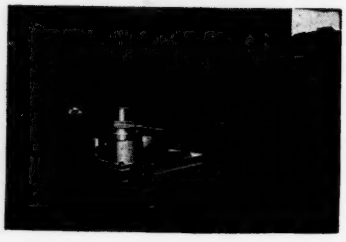
New Arc Welding Electrode Holder

A light, slender, easily handled arc welding electrode holder designed especially for aviation welding, but not restricted to that field, has been introduced by Jackson Products, Detroit, Mich. The holder—Model F-1—is made of special high conductivity copper alloy, has a rated capacity of 200 Amps., takes rods from the smallest up to 3/16", has an overall length of 7⅞ in., weighs 12 oz. and has mechanical or solder cable connection. Insulated, it protects the welder's eyes against flash and eliminates work spoilage that ordinarily results when a bare type holder contacts the work. Its light weight and slim proportions enable the welder to manipulate it easily in tight places.

Portable Link-Belt Car Spotter

The Link-Belt line of motorized electric car spotters, manufactured by Link-Belt Company, 2410 West 18th Street, Chicago, and heretofore furnished only for stationary mounting, is now available also in portable form, as shown in the accompanying illustration.

The spotter is so balanced on a chan-



nel iron frame that one man can lift the one end and roll the unit to any desired location. Operator need but anchor the frame with a chain; plug electric cord into nearest power outlet; hook one end of haulage cable to car or object to be moved; wrap the other end around capstan; turn on the motor; and feed away the cable while the machine does the actual pulling.

Vitrified Clay Septic Tank

A newly designed septic tank and sewage disposal system made of salt-glazed vitrified clay is announced by the Robinson Clay Products Co., Akron, Ohio. Claimed to automatically decompose, purify and dispose of all household wastes, the system is suitable for all types of country and suburban buildings accommodating from five to forty people. The tanks are available in standard system from 200 to 500 gallon capacity and in parallel system from 400 to 1000 gallon capacity.

Industrial News

Youngstown Sheet and Tube Co. Appointment

The Youngstown Sheet and Tube Co., has announced the appointment of Charles W. Test as District Sales Manager of its Philadelphia District with offices located at 1400 South Penn Square, Philadelphia, Penna.

Mr. Test's appointment fills the vacancy caused by the recent death of H. E. Richardson, who previously had occupied this position.

Harry D. Siegele

Harry D. Siegele, for forty years connected with Belmont Iron Works in the capacity of structural engineer, salesman, and for the past three years as director of the company, passed away January 31st after a brief illness.

Four Republic Steel Plants Get Army-Navy "E"

Four of the steel producing plants of Republic Steel Corporation, third largest producer in the United States, have been awarded the Army-Navy "E." They are the Birmingham and Gadsden, Alabama, plants in the Southern District and the Canton and Massillon, Ohio, plants in the Central Alloy District. Presentation of the awards took place in the Central Alloy District at Canton and Massillon on January 19, with George W. Putnam, acting district manager, receiving the award for the company and in the Southern District at Birmingham and Gadsden on January 27, with E. I. Evans, district manager, receiving the award.

An important percentage of the total electric furnace steel used by the arms program is produced in the Central Alloy District. Electric furnace steel is essential in the production of airplanes, tanks, and other wheeled vehicles, as well as many other types of war material. The District also was the first tonnage producer of light armor plate which enabled the country to swing into rapid production of badly needed tanks. From the Southern District comes large quantities of ship plate and shell steel as well as steel for many other arms uses. With the submarine still a grave menace ship plate production has been an important contribution.

J. R. Hewitt Made Vice President of American Manganese Steel

The American Brake Shoe and Foundry Co., has announced the appointment of James R. Hewitt as vice-president of the American Manganese Steel Division effective January 1, 1943.

J. H. Deaderick Made Vice President of Caterpillar Tractor

James H. Deaderick, assistant general parts manager of Caterpillar Tractor Co., since 1941 has been named a vice-president of the company with administrative direction of the parts, service and traffic departments. Starting in the San Leandro, Calif., offices of the Company as a service department employee, he was transferred to Peoria in 1930 and made assistant service manager in 1933. The following year he returned to California as Western service manager, serving in that capacity until 1939 when he became assistant sales manager of the Western division.

J. W. Stang Corp. Opens San Diego Branch

The John W. Stang Corp. has opened a branch warehouse and service station at 2322 Newton Ave., San Diego, Calif., where Wellpoint Systems ready for installation on construction jobs may now be obtained, in addition to the Main Office at 2 Broadway, New York City.

(Continued on page 49)

The Arundel Corporation

BALTIMORE, MD.

Dredging—Construction—Engineering

Distributors of Sand-Gravel-Stone and Commercial Slag

A COMPLETE ORGANIZATION

Our complete organization with years of experience in successfully executing large construction contracts of various kinds is prepared to undertake the construction of earth, masonry and concrete dams, drydocks, dredging of all kinds, river and harbor improvements, deepening channels, hydraulic filling and rock work, tunnels, railroad construction, sewers and waterways.

PERSONNEL:

RICHARD A. FROEHLINGER, President
JOSEPH G. KUHN, Executive Vice-President
JOSEPH N. SEIFERT, Secretary & Treasurer
T. K. SHAUGHNESS, Assistant Treasurer
E. L. WADE, Assistant Secretary
C. WARREN BLACK, Vice-President in Charge of Engineering and Construction
GEORGE H. BACOT, Vice-President in Charge of Materials' Production
JOHN A. REILLY, Vice-President in Charge of New York & New England Areas
L. EARL DIXON, Vice-President in Charge of West Coast Operations

MAIN OFFICE: Arundel Building, Pier 2, Pratt Street, BALTIMORE, MD.

Branches: BROOKLYN, N. Y.—MIAMI, FLA.

GLAMORGAN

PIPE & FOUNDRY CO.

LYNCHBURG, VA.

CONVERSE BRIDGE & STEEL CO.

Chattanooga, Tennessee

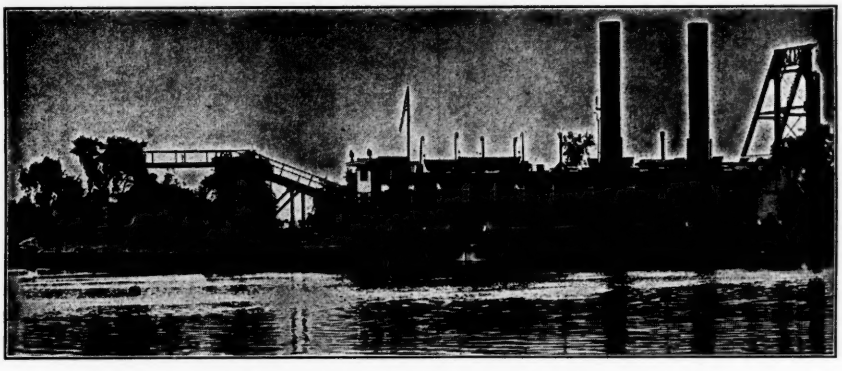
Structural Steel for all Industrial Structures, Buildings and Bridges

LARGE STOCK FOR IMMEDIATE SHIPMENT

DREDGING

FILLING, LAND RECLAMATION, CANALS, PORT WORKS

RIVER AND HARBOR IMPROVEMENTS—DEEP WATERWAYS AND SHIP CHANNELS



We are especially equipped to execute all kinds of dredging, reclamation and port works in Southern waters.
Correspondence invited from corporate and private interests everywhere.

Contractors to the Federal Government

ATLANTIC GULF AND PACIFIC CO.

NEW YORK: 15 Park Row **HOUSTON, TEXAS: Citizens State Bank Bldg.**

HERE IS A NEW METAL

ALUMINUM-COATED STEEL

From ARMCO's Research Laboratories comes a *new* specialty sheet metal—ARMCO Aluminized Steel.

This *aluminum-coated steel* was created for use in products which require exceptional resistance to heat and corrosion. It combines the surface-advantages of aluminum with the strength of steel.

The corrosion resistance of ARMCO Aluminized Steel is due to the formation of a tight, self-healing oxide film on the aluminum coating. This coating is resistant to "pin-holing."

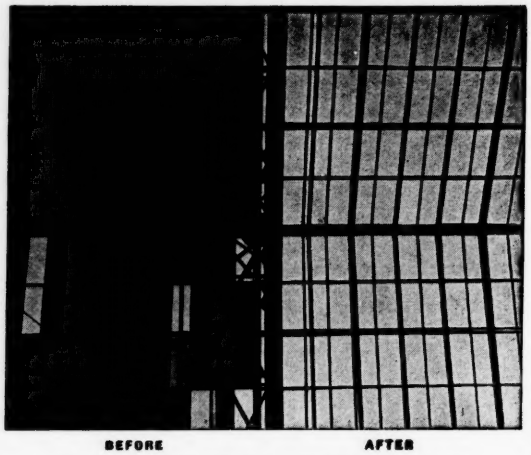
ARMCO Aluminized resists heat discoloration up to 1000° F., and will withstand severe oxidation at even higher temperatures. ARMCO Aluminized may be painted, but in most cases the coated surface is satisfactory. After the war it will be available in a finish that can be buffed to a bright luster.

The aluminum coating clings firmly in moderate drawing and forming operations. In tensile, yield, impact and fatigue strength, ARMCO Aluminized has the same values as its low-carbon or copper-bearing steel base.

You can buy ARMCO Aluminized in either sheets or coils, with a choice of these base metals: low-carbon steel or copper-bearing steel. Gage limits are 14 to 28. In redesigning or creating new war products, does ARMCO Aluminized fit into your picture? Write The American Rolling Mill Company, 401 Curtis St., Middletown, O., for prices and complete information.

MADE OF ARMCO ALUMINIZED STEEL

★ THE AMERICAN ROLLING MILL COMPANY ★



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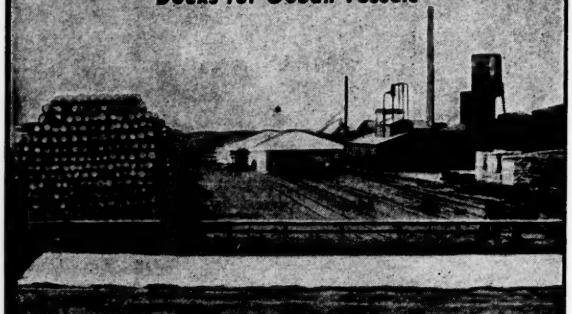

American Creosote Works, Inc.
New Orleans, La.

Atlantic Creosoting Co., Inc.
Norfolk, Savannah, New York
Plants at: New Orleans; Winnfield, La.; Louisville, Miss.; Savannah, Ga.; Jackson, Tenn., and Norfolk, Va.

Industrial News

(Continued from page 46)

Rubber Floor Runner Substitute Shows High Dielectric Strength

Recent tests made in the research laboratory of a large electrical manufacturer demonstrated that the Carey Corrugated Floor Runner has a dielectric strength in excess of 15,000 volts. Former buyers of rubber matting will, it is claimed, find this product a satisfactory replacement for use around switchboards, control panels and other electric equipment.

Samples and details may be obtained from The Philip Carey Mfg. Company, Lockland, Cincinnati, Ohio.

Rayon Multi-Ply Tire

A tire with a new degree of durability and strength making it suitable for heavy duty work, is announced by the Firestone Tire and Rubber Co. Known as the Firestone rayon multi-ply tire, it provides 98 per cent more resistance to body breaks than tires heretofore available for this type of work.

Trade Literature

ION EXCHANGERS—
Booklet—"Ion Exchangers for Industrial Processes" illustrated, describes automatic equipment for commercial percolation type operation in the process industries and lists some of the products, processes and industries in which ion exchangers may be useful.
The Permutit Co., 330 West 42nd Street, New York, N. Y.

FACTORY TRUCKS, TRAILERS AND CASTERS—
Catalog — describes and illustrates the company's line of industrial trucks, trailers, dump wagons and heavy duty steel (rigid and swivel) casters.
Rose Manufacturing Co., 12400 Strathmoor at Fullerton, Detroit, Mich.

WATER WELL EQUIPMENT—
Catalog—Emergency Supplement to Catalog No. 4 presents a revised list of equipment obtainable under present conditions for repair and maintenance purposes. It also lists changes in pattern, design and material made to fit the needs of the particular service.
Clayton Mark & Co., Evanston, Ill.

PUMPS & WATER SYSTEMS—
Manual—with illustrations and diagrams prepared for owner guidance in the care and maintenance of various types of pumps in general use during wartime when new equipment is difficult to obtain.
The F. E. Myers & Bro. Co., Ashland, Ohio.

INDUSTRIAL MOLDED RUBBER GOODS—
Catalog—in question and answer form, designed to supply practical information for those who need guidance in the use, application and development of rubber parts molded to fit specific industrial requirements.
The B. F. Goodrich Co., Akron, Ohio.

PRECISION MACHINES—
Catalog—illustrates and describes DI-ACRO Units including a new shear, No. 3 of 12". Other items include several improved products in the DI-ACRO system of "Metal Duplicating Without Dies."
O'Neil-Irwin Mfg. Co., Minneapolis, Minn.

INDUSTRIAL SWEEPERS—
Catalogs—describe three models of Moto Sweepers. Two of the "Sweeping Crew on Wheels" (the Commander and the Fleetway) are motorized and have optional sulky equipment for large plants. The other, the Detroit model, is manually operated but punches easily and will clean as much as 16,000 sq. ft. of floor space per hour.
The Moto-Mower Co., 4600 Woodward, Detroit, Mich.

CARBIDE TOOL GRINDERS—
Bulletin—No. 201 describes and illustrates a complete line of carbide grinders including the Hammond Combination Chip Breaker and Cup Wheel Grinder which now accommodates up to 6" diameter diamond chip breaker wheels and cup wheels on the right and left sides respectively.
Hammond Machinery Builders, Inc., 1644 Douglas Ave., Kalamazoo, Mich.

WELLPOINT SYSTEMS AND PUMPS—
Bulletin—"Victory Bulletin" describes use of wheelpoints on a diversified number of large construction jobs during the past year.
John W. Stang Corp., 2 Broadway, New York City.

TEMPERATURE REGULATION—
Manual—contains interesting and helpful information as to how to reduce consumption of heating oil with illustrations, charts and diagrams. Construction, application operation of the Tri-trol Regulator are described in detail.
March Tri-trol Co., 600 S. Michigan Ave., Chicago, Ill.

PUMP VALVES—
Catalog—describes and illustrates the use of valve installations in large pumping stations including high and low type of seat and valve construction used in flat deck pumps.
Buch Manufacturing Co., 1521-23 N. Sedgwick St., Chicago, Ill.

INDUSTRIAL THERMOMETERS—
Bulletin—G23-2 discusses the operating principle of Whaelco thermometers, and gives information for selecting the proper instrument. A table gives complete details on characteristics, performance and limitations of each class of vapor-pressure and gas filled instruments. Similar information to aid in selection of bulb and socket materials, and of capillary and its armor, is also included.

Bulletin—G503-2 covers the company's recording control thermometer, while G603-2 is on the Whaelco indicating control theromometer. Both bulletins discuss the company's "electronic principle" of effecting control without mechanical contact between measuring and control sections of the instruments.

Bulletin—G303-2 describes and gives applications for the company's indicating thermometer, while Bulletin G403-2 covers its recording thermometer.
Whaelco Instruments Co., Harrison and Peoria Sts., Chicago, Ill.

FOR IMMEDIATE SALE
25,000,000
FEET OF LUMBER !
If you need Timbers — lumber for any purpose — get in touch with us immediately. We offer:
CONSTRUCTION TIMBERS
Cut to Order for Prompt Shipment
OAK — Square Edge and Sound
4 x 4" to 16 x 16", 20' and shorter
10 x 10" to 20 x 20", 14' to 40', average 24' Lineal.
CYPRESS — TIDEWATER RED
Square Edge and Sound
10 x 10" and up. Lengths 14 to 40', average 24' Lineal.
YELLOW PINE
4 x 4" to 16 x 16" — 20' and shorter
No. 1 Dense • No. 1 Dense Structural • Dense Structural
LUMBER IN STOCK—IMMEDIATE SHIPMENT
Yellow Pine Dimension
No. 2, No. 1, and Structural Grades
2 x 4" to 2 x 12" — lengths 8 to 20',
Dressed as desired.
Hardwood Construction Boards, Dry, No. 1 and No. 2
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Annual Capacity Over 200,000,000 Feet!
BAND MILLS IN NORTH CAROLINA
SOUTH CAROLINA GEORGIA
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HARDWOODS-CYPRESS-YELLOW PINE
General offices: AUGUSTA, GEORGIA, USA

Charleston, S. C., Looks To the Future

The Charleston Industrial Bureau, Charleston, S. C., is looking ahead to the days of peace. A message to industrialists is carried on another page. Realizing that the prime thought of America in every walk of life today is directed toward the winning of the war, the fact is not overlooked that individuals and corporations without any lessening of the drive for victory are at the same time thinking of peace days and a war torn world to be rehabilitated. The Industrial Bureau calls attention to some of the things that Charleston and Charleston County have done and are planning to do.

In this area there is now being delivered electric energy at the rate of more than 1,000,000,000 kilowatt hours a year for military camps and war production—all available for post-war industry. At that time there will be available more than 10,000 new housing units for industrial workers and in addition to unexcelled advantages in climate, labor and transportation, rail, highway, water and air, this Industrial Bureau in pointing to the fact that "when peace comes the largest domestic and foreign markets in history will be ready for any producers who can serve them" says "back of these economic tangibles is a fine citizenship * * * cultured citizenship, educated, informed, acquainted with the correct approach to honest work and intelligent living * * * a citizenship that believes in all the fundamentals of the American Way of Life."

American Chemical Society To Meet April 12 to 16

The 105th national meeting of the American Chemical Society, to be devoted exclusively to the advances of Chemical Science and industry in relation to the war effort, will be held in Detroit, April 12 to 16. Ten "war symposia" are scheduled. Fifteen divisions of chemical science will convene, with 4,000 chemists and allied scientists attending.

Special symposia will bear directly on the successful prosecution of the war. The Division of Agriculture and Food Chemistry will hear reports on substitutes for agricultural and food commodities of which there are inadequate supplies to meet current demands. It will also hold a session on stabilization of fats, a matter of importance in food for the armed forces.

Recognizing the increasing scarcity of certain high-protein foods, the Division of Biological Chemistry together with the Agricultural and Food Division will sponsor a program on vegetable proteins. The two divisions will also hold meetings on vitamins and on assay methods for determination of vitamins, now incorporated in foods by federal regulations.

Outstanding authorities will discuss the chemical aspects of civilian defense at a meeting of the Division of Chemical Education. "Malaria" will be the subject of the Division of Medicinal Chemistry.

Recent developments in synthetic rubber technology, accelerated by the war, will be dealt with by the Division of Rubber Chemistry. Solvents, occupying an essential place in war industry, will be discussed by the Division of Industrial and Engineering Chemistry. Since industry cannot function without large quantities of suitable water, industrial water supplies will be the topic of a symposium of the Water, Sewage, and Sanitation Chemistry in collaboration with the Industrial Division.

Petroleum chemists will devote themselves to analytical methods. Other divisions meeting include organic, physical and inorganic, cellulose, colloid, gas and fuel, analytical and micro chemistry and sugar chemistry and technology.

B&W Refractories Division Receives Army-Navy "E"

On January twenty-second the formal award of the Army-Navy "E" pennant and pins was made to the Refractories Division Plant of The Babcock & Wilcox Company at Augusta, Georgia.

Rear Admiral Clark Howell Woodward, U.S.N., (retired) Chief of the Incentive Division of the Navy, made the formal presentation of the pennant to A. G. Pratt, President of The Babcock & Wilcox Company, while Col. Herbert W. Schmid, U. S. A., Post Commander of Camp Gordon, Georgia, presented the "E" pins to the employees.

Exceptional Facilities for the Collection of Drafts

Remittance made on day of payment.

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ROBERT C. WILLIS, JR., *President*

BALTIMORE, MARYLAND

Member Federal Reserve System
Member Federal Deposit Insurance Corporation

While cosmopolitan in its general appeal, and modern *up to this moment* in its equipment, there is a peculiar flavor of The Old South here which Southerners are quick to note and appreciate. They feel at home and come back to us again and again.

Rates $3.00 per day and up. Every room with bath or shower. Centrally located.

The Southern Hotel
BALTIMORE

INDUSTRIAL SURVEYS
in the Seaboard Southeast

FOR MANY YEARS we have helped industry by furnishing reliable surveys on industrial locations in the Seaboard Southeast.

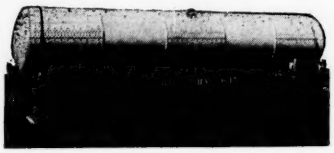
MORE RECENTLY we have likewise assisted numerous Government agencies by supplying authentic reports on various parts of our territory.

OUR PRIME OBJECTIVE:—To contribute to our Country's war effort in every possible way until victory is won.

INDUSTRIAL DEPARTMENT
SEABOARD AIR LINE RAILWAY

WARREN T. WHITE
General Industrial Agent
Norfolk, Va.

SOUTHLAND PRODUCTS
—WELDED OR RIVETED—



We now manufacture and offer to the trade tanks in all sizes for pressure or gravity work. Also other steel equipment of either

WELDED OR RIVETED CONSTRUCTION

This applies to field as well as shop built equipment.

Write us for information and quotations.

CHATTANOOGA BOILER & TANK CO.
CHATTANOOGA, TENN.

EPPINGER AND RUSSELL CO.
Wood Preservers Since 1878
All kinds of Structural Timbers and Lumber Pressure Treated with Creosote Oil or

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POLES • CROSS ARMS • PILING • TIES
POSTS, BRIDGE AND DOCK TIMBERS

Treating Plants—JACKSONVILLE, FLA. • LONG ISLAND CITY, N. Y.

CRUSHED STONE

Only highest grades of crushed
LIMESTONE AND GRANITE
Meeting all specifications

CAPACITY—8000 tons daily

Blue Ridge, Va. Pembroke, Va. Pounding Mill, Va.
Boxley, Greensville County, Va.

W. W. BOXLEY & COMPANY
Boxley Building, ROANOKE, VA.

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IN THE THICK OF DEFENSE WORK

Not only for private plants engaged in defense work, but for the U. S. Government itself. Both classes know the utility of cypress tanks. We know how to build them. Wooden pipe also. Send for catalogue.

DAVIS CYPRESS TANKS

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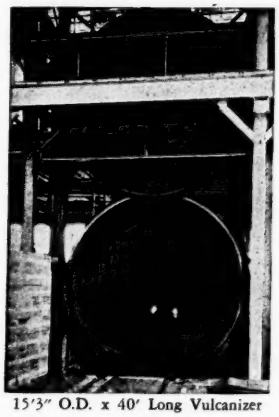
Lancaster TANKS



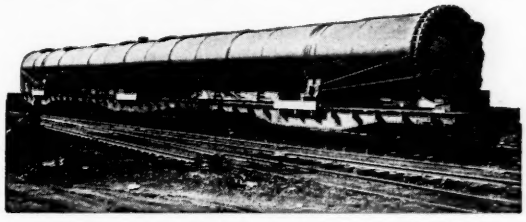
15'3" O.D. x 40' Long Vulcanizer

ELEVATED TANKS — PRESSURE TANKS — STEEL STORAGE TANKS — PROCESS TANKS — BUTANE-PROPANE TANKS—STANDPIPES—RETORTS—BINS — EXTRACTORS — BARGES — DREDGE PIPE AND ACCESSORIES — WELDED PIPE — RIVETED PIPE.

General Steel Plate Construction designed for your requirements.

LANCASTER IRON WORKS, INC.
LANCASTER, PENNSYLVANIA

Tank Builders For Over 80 Years!



Cole Creosoting Cylinder 8' diameter x 138' long.

High Pressure Vessels of Quality Steel

When in need of tanks and vats for acid storage, NaOH storage, etc., agitator tanks, bubble towers, gas scrubbers, creosoting cylinders and other heavy pressure vessel and fabricated work, call on COLE "Custom-made" to order in plain and Alloy steel, Nickel-Clad and Stainless steel, Monel metal, lead lined, tin lined, aluminum, etc. Other COLE products are:

Tanks
Towers
Standpipes
Smokestacks
Kiers
Kettles
Vats
Air Receivers
Boilers (HRT and Manning)
Welded Steel Pipe
Digestors
Storage Bins
Fabricated Framework

Our Engineering Department will submit designs or any equipment may be made from your own specifications.

Write for "Tank Talk"—No. 13-D.

R. D. COLE MANUFACTURING CO.
ESTABLISHED 1854
NEWNAN GEORGIA

Sub-Contractors Wanted

For information, blue prints, specifications, etc., on the following items write or telephone the Philadelphia or Baltimore office of the War Production Board, quoting the symbol number of the item in question. You will then be put in touch with the engineer assigned to that item. Please quote the Manufacturers Record.

Ref. Keefer-2-1

A Pennsylvania manufacturer requires subcontracting facilities to produce between 750 and 1000 pieces daily of a CARTRIDGE CONTAINER. Equipment required: Multiple Spindle Automatic Screw Machines. Material: Cold Rolled Steel, WD-1115 Cadmium Plated. Dimensions: Length 2⅞"—O. D.—1.215". Tolerance: + or —.004". Internal and external threading.

Ref. Keefer-2-2

A Pennsylvania manufacturer requires subcontracting facilities to produce 200,000 "HEADS" monthly. Production to start during February. Equipment required: Multiple Spindle Screw Machines. Material: Steel WD-1020 or WDX-112. Dimensions: Length 1.00"—O. D.—615". Tolerances: +.001 and —.002. External threading.

Ref. Buescher-1-1

A Pennsylvania manufacturer requires additional facilities for machining the TOP CAP AND ADJUSTING CAP for 60,000# universal testing machine. Equipment required: Horizontal Boring Machine 2" or 3" bar; Planer 24" wide; Drill Press; Slotter; Milling Machine #4. Tolerance: plus or minus .002. Experience required: Deep Boring. Bore Diameter 1¼", Length 33½". Overall Dimensions: 41¾" long x 9" wide x 7⅝" high. Material: Cast Steel. Castings will be furnished.

Ref. Buescher-64-1

A Pennsylvania concern requires subcontracting facilities for the machining of reciprocating STEAM ENGINE CYLINDERS. Equipment required: 4' Radial Drill, Vertical Boring Mill, 129" Swing, 73½" under bar, Planer—width 80" equipped with top and side cutting heads. Overall dimensions: 93½" x 79.5" x 73½" high. Cylinder Bore Diameter—28.250 plus or minus .001. Tolerance Depth—69¼", Steam Chest Bore—16" plus or minus .001. Tolerance Depth—64½". Material: Semi-Steel. Castings can be furnished either by prime or subcontractor.

Ref. Buescher-64-2

A Pennsylvania concern requires subcontracting facilities for the machining of reciprocating STEAM ENGINE CYLINDERS. Equipment required: 6' Radial Drill, Vertical Boring Mill—112" swing, 73½" under bar, Planer—width 6" equipped with top and side heads. Overall dimensions: 72" x 106" x 73½" high. Cylinder Bore Diameter 37" plus or minus .002. Tolerance Depth—51⅞". Material: Semi-Steel. Castings can be furnished either by prime or subcontractors.

Ref. O'Hara-55-3

A New Jersey concern requires machining facilities for WATER CYLINDERS and POWDER CONTAINERS. Steel castings furnished by Prime Contractor and are available immediately. Cylinders weigh approx. 8020# and Powder Containers weigh approx. 6020#. Machines required are Horizontal Boring Mills with 5" to 7" bar x 6' horiz. travel. Vertical Boring Mill 60" x 72" head clearance, or an Engine Lathe 60" swing x 72" ¢ to ¢. 3000 to 5000 hours required before March 1, 1943. Priority AA3.

Ref. Buescher-61-1

An Ohio Corp. requires 25,000 DISCHARGE VALVE SEATS. Material: Stainless Steel. Equipment required: Automatic Screw Machine, 1" Spindle, Hand Screw Machine, Drill Press, Flat Lapping Machine, ½" Diameter x 1/32" seat. Dimensions 1" O. D. x .328 width. Tolerance .002, threads NEF#3. Material to be furnished by contractor.

Ref. Buescher-65-1

An Ohio corporation requires 25,000 VALVE RETAINERS. Equipment required: Hand Screw Machine, 1 inch Spindle, Drill Press. Tolerance: .001 inch threads, 1 inch—20 NEF #3 fit. Dimensions: 1 inch O. D. x .328 inch width. Material: Stainless Steel, to be furnished by the contractor.

U. S. War Costs in 1942 Total $52,406,000,000

War expenditures by the United States Government in 1942 totaled $52,406,000,000. This was 3.8 times the $13,895,000,000 spent in 1941.

The average daily rate of expenditures during the 310 days in 1942 on which checks were cleared was $169,100,000. This compared with $45,600,000 for the 305 days on which checks were cleared in 1941.

During the month of December war expenditure totaled $6,125,000,000, which was an increase of $13,000,000, or 0.2 per cent, over November. November expenditures were $390,000,000 higher than those of October, an increase of 6.8 per cent.

The daily rate of expenditures averaged $235,600,000 in December, compared with $244,500,000 in November.

American Bridge Company Launches Its First Landing Ship for Tanks

The first of a large number of new type offensive weapons from the Navy shipyard at Ambridge, Pa., operated by the American Bridge Company, were launched on January 23, in the form of a landing ship for tanks.

In making the announcement, L. A. Paddock, president of this U. S. Steel subsidiary, disclosed that this first vessel was launched exactly nine months from the day construction of the new 64-acre shipyard was begun. The ship was sponsored by Mrs. Harry F. Snyder, wife of Lieutenant Snyder, U.S.N.

Yearbook of Railroad Information

There has come to this office a copy of "A Yearbook of Railroad Information," 1942 Edition prepared by the Eastern Railroad Presidents' Conference Committee. The purpose of the book is to present facts regarding the railroads of the United States which today are faced with the greatest task in their entire history.

With freight traffic setting records for new high peaks, with passenger traffic soaring and with efficiency correspondingly increased, new equipment being installed, rises in employment and payrolls, the facts and figures given are of greater value now than in normal times. Every page is full of vital information on every phase of railroad activity.

Charleston, S. C., Year Book

The 1941 Year Book of Charleston, S. C., just issued, may well serve as a model for other communities in the completeness of its information.

In the transition from peace to war times, Charleston like other cities has found many problems demanding settlement. Attention is called to this in the Mayor's statement which opens the volume. Photographs which are an interesting part of the book add emphasis to war activities. The reports dealing with all phases of the life of the municipality appear to be thorough even to the smallest detail.

There are in addition photographs of modern residences and reproductions of portraits of famous Charlestonians of another day. A place of honor occupying more than 40 pages is given to the work and history of the Ladies' Benevolent Society founded in 1813.

Quicksilver Deposits in Texas

Quicksilver deposits in the Terlingua district, Brewster County, Tex., have been examined by geologists of the U. S. Geological Survey, as part of the Survey's program of investigation of domestic deposits of strategic minerals. A geologic map of the area surrounding the Chisos mine and level maps and sections of the mine have been made. Should a demand arise, maps of other mines and potential quicksilver-producing areas will be prepared as field work is completed. A limited number of photostat copies of the maps will be available for those directly interested. Requests should be addressed to The Director, Geological Survey, Washington, D. C.

FINE GEARS of all Materials—All Types and Sizes
Spur Gears—½ in. to 80 ft. in diameter
Bevel Gears—½ in. to 12 ft. in diameter
Spiral Gears—⅛ in. to 10 ft. in diameter
Worm gears any practical size. Racks curved or straight. Fast Delivery—Fair Prices
THE EARLE GEAR & MACHINE CO.
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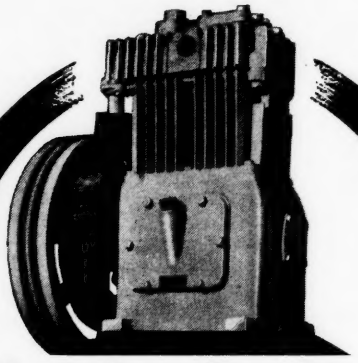
EARLE GEARS

STRUCTURAL STEEL for BUILDINGS and BRIDGES
Capacity 1000 Tons per Month. 3000 Tons in Stock
Carolina Steel and Iron Company
The Largest Steel Fabricators in the Carolinas
Greensboro North Carolina
S. C. Rep. Edward McCrady, 307 Allen Bldg., Greenville, S. C.



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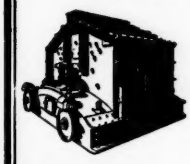
TOPS IN EFFICIENCY

QUINCY was *first* to design and build an air compressor that combined modern appearance with improved mechanical features. Construction is simpler. Radiation area is increased 12%. Lubrication is more thorough—more positive. The policy of building air compressors *exclusively* has helped to make the name "Quincy" a symbol for dependability and efficiency. *If you have compressed air problems, let us help you solve them!* QUINCY COMPRESSOR CO., Dept. R-1, Quincy, Illinois.

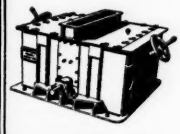
Quincy
COMPRESSORS

"PENNSYLVANIA" CRUSHERS



HAMMERMILLS

The Central Feed REVERSIBLE is the most outstanding advance in Hammermill design in 20 years. REVERSIBILITY is an exclusive "Pennsylvania" feature. For Limestones, Cement Rocks, Gypsums and wide variety of Chemicals and Industrial Minerals. Automatic hammer turning. Adjustable Cages . . . Tramp Iron protection. Steelbuilt. Patented.



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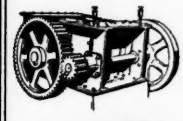
An advanced, new type that reduces by direct impact. For high Silicas, Clinkers, Slags, Chrome and Manganese Ores, Furnace Refractories, etc. Makes "cubing" particle shape, not "slivery". Several sizes. Patented.



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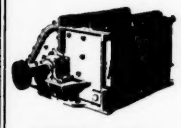
An advanced design, specialized for Coal Preparation in Mines, Cleaning Plants, Gas Works and Power Plants. Sizes for Chemicals and Industrial Minerals. Automatic Tramp Iron Protection, quick adjustability from ¾" to 8" sizing. Powerful Steelbuilt construction. Patented.



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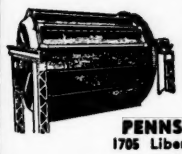
Granulate materials of medium hardness . . . Bituminous coal, . . . Gypsum Rock, etc., to produce sizes ⅛" to 2", with minimum fines and oversize. Operation practically dustless. Steelbuilt. Patented.



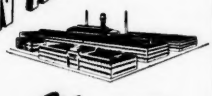
BRADFORD BREAKERS

Reduce R.O.M. for Stoker or Pulverizer feed with absolutely no oversize and low "overgrinding." Crush by gravity impact. Automatically eject, without damage, tramp iron, mine debris and hard rock. Low H.P. . . . slow speed . . . long life. Low up-keep. . . . rugged. . . . thoroughly dependable. 25 to 500 T.P.H. Steelbuilt. Patented.

Bulletins are available to interested parties.

PENNSYLVANIA CRUSHER CO.
1705 Liberty Trust Bldg., Philadelphia, Pa.
Offices in Principal Cities
Associated with Fraser & Chalmers Engineering Works, London, England.

RIGHT DOWN OUR PRODUCTION ALLEY



We want WAR SUB-CONTRACT work!

We need work — you need help — let's get together.

Stewart has enormous manufacturing and ample shipping facilities for production runs of units or parts of units fabricated from angles, flats, tees, rounds, squares, sheets, strips, and plates involving the use of equipment listed at the right.

Stewart offers competent engineering service; on time deliveries; best workmanship and the highest financial rating obtainable. When writing, please send specifications and complete information.

PRODUCTION FACILITIES

Punch Presses • Shears
Power Brakes • Spot, Arc and Gas Welders
Drill Presses • Bull Dozer Forming Equipment • Automatic Saws • Heat Treating Furnaces • Finishing Equipment • Tool Room Equipment.

Stewart
FABRICATORS OF
IRON · STEEL · WIRE
ANGLES · FLATS · ROUNDS · SQUARES · TEES · STRIPS · SHEETS · PLATES

THE STEWART IRON WORKS CO. Inc.
1963 Stewart Block
Cincinnati, Ohio

BELT LACING and FASTENERS for transmission and conveyor belts

"JUST A HAMMER TO APPLY IT"

ALLIGATOR

Trade Mark Reg. U. S. Pat. Office

STEEL BELT LACING

World famed in general service for strength and long life. A flexible steel-hinged joint, smooth on both sides. 12 sizes. Made in steel, "Monel Metal" and non-magnetic alloys. Long lengths supplied if needed. Bulletin A-60 gives complete details.

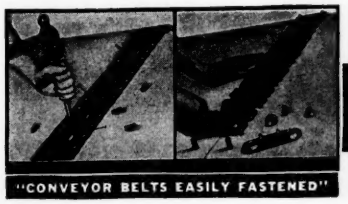
FLEXCO HD

BELT FASTENERS AND RIP PLATES

For conveyor and elevator belts of all thicknesses, makes a tight butt joint of great strength and durability. Compresses belt ends between toothed cupped plates. Templates and FLEXCO Clips speed application. 6 sizes. Made in steel, "Monel Metal", non-magnetic and abrasion resisting alloys.

By using Flexco HD Rip Plates, damaged conveyor belting can be returned to satisfactory service. The extra length gives a long grip on edges of rip or patch. Flexco Tools and Rip Plate Tool are used. For complete information ask for Bulletin F-100.

Sold by supply houses everywhere



"CONVEYOR BELTS EASILY FASTENED"

FLEXIBLE STEEL LACING CO.
4690 Lexington St.
Chicago, Ill.

Every Minute Saved in Maintenance . . . Means More Productive Hours

And these husky "King-clip" valves are doing just that . . . saving those precious minutes that add up to more productive time. With "King-clips" on the job, maintenance is cut to a minimum . . . users are assured of a practically permanent installation, free from the hundred-and-one "valve headaches".

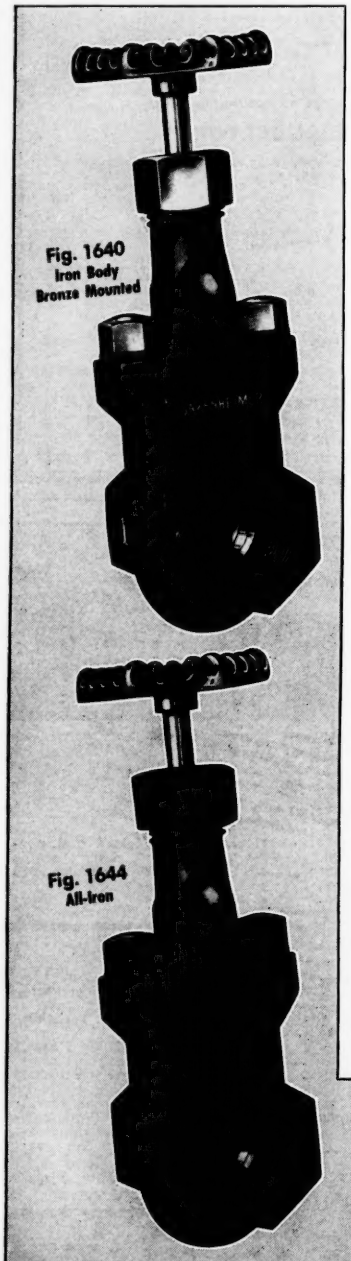


Fig. 1640
Iron Body
Bronze Mounted

Fig. 1644
All-Iron

"King-clip" Valves are doing their part in another respect, too . . . in conserving critical materials. Since only the working parts are made of bronze, these iron body valves use less copper, tin and other scarce materials than all-bronze valves, and they perform equally as well on many services.

And here's an important point . . . you are likely to get better deliveries on "King-clips" than on the scarcer all-bronze valves. The complete facilities of Lunkenheimer distributors are at your service. They'll go out to help you get the things you need.

●

Since virtually all materials used in the manufacture of valves are on the list of critical materials, valve users are urged to furnish the highest possible preference ratings and proper "end use" information on their orders. This will be of mutual helpfulness.

ESTABLISHED 1862
THE LUNKENHEIMER CO.
"QUALITY"
CINCINNATI, OHIO, U. S. A.
NEW YORK CHICAGO
BOSTON PHILADELPHIA
EXPORT DEPT. 318-322 HUDSON ST., NEW YORK

Bronze, Iron and Steel Valves, 125 to 2500 lb. S. P. for all Industries; Boiler Mountings, Lubricating Devices, Aircraft Fittings

5—85C—42

Alabama Bauxite District Map Available

Geologic map of Eufaula bauxite district, southeastern Alabama.

A geologic map of land in southeastern Alabama that may contain valuable deposits of bauxite (aluminum ore) has been prepared by geologists of the Federal Geological Survey.

This map covers the Eufaula bauxite district, an area of about 160 square miles in Barbour and Henry Counties, Ala. It shows the geologic formations exposed at the surface, the outcrops of bauxite, existing mines, and areas believed to be favorable for further prospecting.

The potential reserves of bauxite in this district under a cover of less than 50 feet of overburden are estimated to be between 250,000 and 1,000,000 tons, of which about half is high enough in aluminum oxide (Al_2O_3) and low enough in silica (SiO_2) to be aluminum ore under present standards. The bauxite masses range in size from a few tons up to 25,000 tons or more.

Clemson College Dean Resigns

H. H. Willis has resigned as Dean of Clemson Textile School, which position he has filled for the past fifteen and one-half years. During this time the School has made an enviable record, having grown from an enrollment of some seventy students and four teachers to some three hundred fifty students and fifteen teachers prior to the present War.

From 1927 until 1940 the Clemson Textile School has placed all of its graduates in the textile industry or allied branches. Many of these years the School had from two to three times as many calls as it had textile graduates.

For several years Dean Willis and the late Dr. Sikes did much work in South Carolina in acquainting the people and the legislature with the need for an adequate textile building. As a result a $475,000.00 building was erected in 1938. During 1939 Dr. Sikes and Dean Willis met with cotton manufacturers of South Carolina and discussed a plan for obtaining additional equipment for the new textile building. A Committee, consisting of Messrs. J. E. Sirrine, J. B. Harris and R. H. Chapman, was formed. This Committee has done a very fine job, and during 1940 and 1941 raised approximately forty-five thousand dollars from manufacturers interested in Clemson Textile School. The outbreak of war and priorities have postponed temporarily the purchase of this new equipment.

Mr. Willis plans to devote part of his time to a textile training program in South Carolina which offers guidance and assistance to young men in the textile industry in getting additional training in textiles. He will devote some time to cooperative work in labor relations and technical work in textile plants.

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HORIZONTAL *VERTICAL*

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ROTARY CUTTERS

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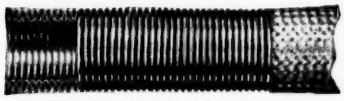
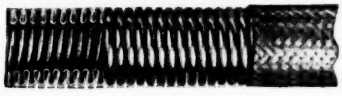
REX-WELD
Flexible Metal Hose

Rex-Weld Hose—Annular Corrugations



RW-80 Unbraided ——— RW-81 Braided

Rex-Weld Hose—Helical Corrugations



RW-90 Unbraided ——— RW-91 Braided

—General Data—

	STEEL	BRONZE
Sizes	To 4" I.D.	To 4" I.D.
Pressures	To 14,500 p.s.i.	To 14,500 p.s.i.
Temperatures	To 1000° F.	To 450° F.
Lengths	To 50'	To 50'

—Use Chart—

	*STEEL	BRONZE
Saturated Steam		✓
Superheated Steam	✓	
Sulphur Bearing Oil	✓	
Oxygen		✓
Ammonia	✓	
Carbon Dioxide	✓	
Sulphur Bearing Grease	✓	
Critical Vibration		✓
Non-Sparking		✓

**Protective Coatings Can Be Applied for Corrosion Protection (To Conserve Critical Copper Bearing Alloys).*

Couplings: REX-TITE Mechanical (Re-attachable) Couplings; Solder Couplings; Brazed and Welded Couplings and Flange Assemblies for Rex-Weld Flexible Metal Hose.

Ask for Engineering Recommendations

CHICAGO METAL HOSE CORPORATION
General Offices: MAYWOOD, ILLINOIS
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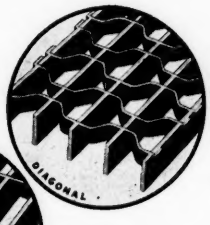

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OPEN STEEL FLOORING • SAFETY STEPS
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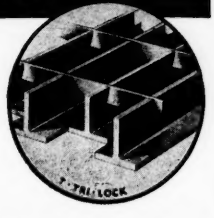
REPRESENTATIVES IN PRINCIPAL CITIES

Full descriptive catalog of Tri-lok Grating, Safety Treads and other products on request.



25,504 Defense Homes Started in Norfolk

Editor, MANUFACTURERS RECORD:

Many of Virginia's 200,000 defense workers and uniformed personnel have saturated the nation with the idea that Norfolk people want the acute house shortage here.

We formed the Emergency Housing Committee, a civilian committee to cooperate with out of town builders to build defense homes as fast as Rear Admiral Manley Simons, Commandant of the Fifth Naval District called for them.

The writer acted as Chairman of the Committee and is proud of the fact that we have started under F. H. A., F. W. A., etc., 25,504 defense homes in this district. We admit that we are still several thousand short but that is caused by the Government building several new ship yards in Berkley-Campostella Ward of Norfolk and we expect to get out of town builders to supply that section with defense homes as soon as practical.

We admit we still have a house shortage around Norfolk but we do not think we are to blame for the 25,504 new homes would have solved the problem had it not been for the two new ship yards now being built here.

W. B. SHAFER, JR.
Norfolk, Va.

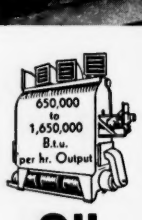
PICTURED here are some of the many applications to provide heat for industrial buildings and service camp structures where Dravo Heaters were installed and, in many cases, in preference to a central steam heating plant.

Each Dravo direct fired heater is a self-contained unit with its own combustion chamber, motor and fans to circulate the warm air in the space to be heated. One or more of these heaters can be arranged to heat buildings of any shape.

Such a system is quickly installed, furnishes instant heat and represents a substantial saving in manhours and scarce metals over a central steam heating plant and necessary distributing system.

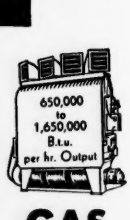
Types for any application—models for all fuels—request Bulletin 505—or consult "Sweets."

DRAVO CORPORATION
Heater Department
DRAVO BLDG., PITTSBURGH, PA.
Forty-seven Sales Offices in Principal Cities



OIL

DRAVO DIRECT FIRED HEATERS



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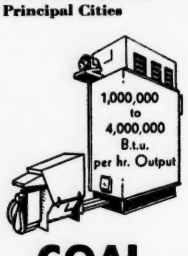

COAL

100 Years of Steel Service

(*Continued from page* 44)

been most active in furnishing steel for war and other essential industries. About 94% of its shipments go directly into the war effort.

The tremendous war program has made inroads in the company's stocks. However, it is essential that a wide range of steels be kept available in stock and it is planned to continue this service for the duration.

Ryerson's Chairman of the Board today is Edward L. Ryerson, grandson of the founder, who is also Chairman of Inland Steel Company, now its parent company. His brother, Joseph T. Ryerson, who served as President of the Ryerson Company during the first World War, continues as a director of Inland Steel. Everett D. Graff, veteran steel executive and 35 years with the Ryerson Company, is now its President.

New Industrial Plants and Expansions in the South

(*Continued from page* 39)

on Pelican Island; wharf will be 128 ft. long and 24 ft. wide; three 7-pile dolphins and one 3-pile dolphin.

GARLAND — addition — Continental Motors Corp. plans addition to manufacturing plant; plan completed about Feb. 10; Dahl & Chappell, Archts. and Engrs., Texas Bank Bldg., Dallas.

HOUSTON — plant — McArthur Welding & Press Co., 1114 Wood St., acquired plant at 5525 Clinton Drive.

PLAINVIEW—dehydration plant—War Production Board has approved installation of a vegetable dehydration unit for Hale County Foods Canning Plant at Plainview; capacity approximately 75 tons of raw potatoes daily.

VIRGINIA

CRIMORA — mining — Dominion Manganese Co. leased and will develop Old Dominion and Crimora managanese mine properties at Crimora; H. A. Brassert & Co., mining and consulting engineers of New York City, will be the operating engineers; C. F. Schaber will be supervising engineer with Donald E. Ellersten, engineer in charge of operations.

SMITHFIELD—merger—State Corporation Commission, Richmond, authorized merger of Smithfield Packing Co., Inc., and Virginia Packers, Inc., into a single corporation under name of Smithfield Packing Co., Inc.; authorized capital $400,000; J. W. Luther, Sr., Pres.

"Rubber Goes to War" Film

"Rubber Goes to War" is a fast-moving 16 mm. film in black and white with sound track that takes one from plant to plant of United States Rubber Company's Footwear Division. It shows war products in volume production, then shows each product in actual use by our armed forces. In two reels having a running time of 21 minutes, it is available without charge from Footwear Division, United States Rubber Co., 1230 6th Avenue, New York, N. Y.

Addition to the Brunswick, Ga. plant of the

HERCULES POWDER COMPANY

ELECTRIC ARC WELDED

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BETTER CONSTRUCTION AT LOWER COST

THE AETNA STEEL CONSTRUCTION CO., JACKSONVILLE, FLA.

Hand and Windmill Well Pumps

Tank Pumps, Cylinders and Accessories

Hand and Power Sprayers, Spray Pumps Nozzles and Fittings

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AGRICULTURAL - COMMERCIAL - INDUSTRIAL

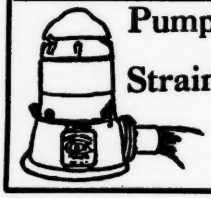
Take Off Your Hat to The MYERS

The F. E. Myers & Bro. Co.

ASHLAND, OHIO, U. S. A.

Deep Well and Shallow Well Plunger Type and Ejecto Type Pumps and Water Systems

Pump Jacks and Centrifugal Pumps



Pumps— Deep-Well Plunger and Turbine

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WATER PRESSURE SYSTEMS

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Have it done by Philadelphia's OLDEST, the Country's LARGEST

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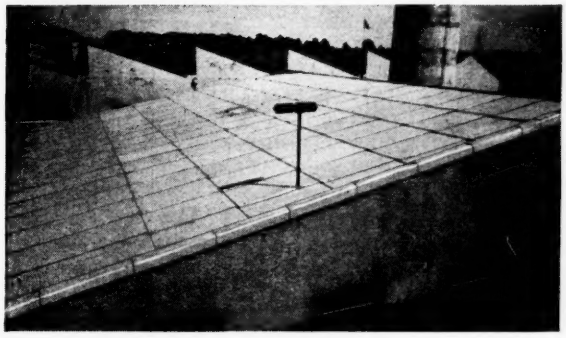


The INDUSTRIAL ROOFING and SIDING of today and tomorrow —

Careystone CORRUGATED

Careystone is the economical roofing and siding for today's industrial construction—prophetic of the better building materials that will continue to come from America's research laboratories. Fireproof, weatherproof and time-defying; speedily erected; requires no maintenance, as painting is not essential.

Service requirements are never too tough for Careystone Corrugated. As expressed by the Jax Brewing Company, Jacksonville, Fla., "This is one roof that has given us no trouble under the most severe conditions." Careystone Corrugated offers you the same trouble-free, expense-free service. Write dept. 61 for full information.

THE PHILIP CAREY MFG. COMPANY

Dependable Products Since 1873 LOCKLAND, CINCINNATI, OHIO

In Canada: The Philip Carey Co., Ltd. *Office and Factory:* Lennoxville, P.Q.

Katy's Most Prosperous Year

(*Continued from page 25*)

The sprays make short work of the job, and the car rolls down the track to the stenciling department.

Here the stencils are attached to the sides and ends of the car by the use of tape, and black paint is sprayed through the openings in the stencil. With the final letter sprayed on, the stencil is removed, the shop whistle blows, and another box car, new for all practical purposes, rolls out into the yards, ready to do its part in the transportation needs of a warring nation.

Although speed is emphasized in the reconstruction of these cars, it is not hasty and wasteful. It is an efficient, economical speed, carefully planned and skillfully executed. The production is achieved not only through the expert workmanship of each man in his particular job, but also through excellent management and perfect coordination between all departments, so that the shop operates as a single unit.

Modern methods contributed to increased production. Pneumatic tools are used wherever possible—spraying paint, turning wrenches, blasting sand, pushing drills. The unit assembly system, used in the application of air brake pipes and fittings, doors, running boards, etc., eliminates much waste motion and needless work.

This system was adopted after extensive and careful study of modern shop methods by H. M. Warden, chief mechanical officer, and J. R. Hayden, superintendent of the car department at Denison. Since its adoption constant improvement in machinery, tools and methods has made it possible to increase production 50 per cent without increase in man power. Only when the volume of production is expanded, as during the present program, is it necessary to increase the personnel.

Essential Cottonseed

(*Continued from page 27*)

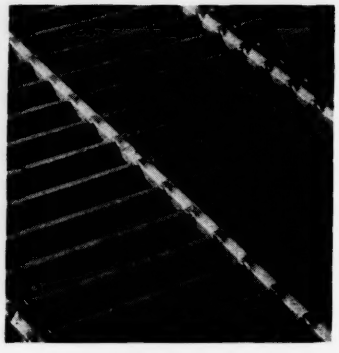
pounds of greatly-needed products because we fear we might not be able to use 500 pounds of lint. That is the approximate ratio of needed products—oil, meal and hulls, and linters—to the lint cotton; and, there are many reasons for believing that the lint, too, will be needed during the war and after.

Both the winning of the war and the economic well-being of the United States and the Cotton Belt after the war demand that we make a greater utilization of our capacity for producing cotton and cottonseed and converting them into things that are not only useful but essential.

Norepol, A New Substitute Rubber from Vegetable Oils

(*Continued from page 33*)

When Sparks returned to private industry the work was carried on by Dr. J. C. Cowan, who developed the specific reactions that resulted in the laboratory product from soybean, corn, or other vegetable oils. Then, under the supervision of Dr. R. H. Manley, Dr. Dowan—with Dr. Waldo C. Ault and Dr. Howard M. Teeter—went ahead on the process and pilot-plant trials and became co-inventors of the Norepol process.



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Square edge bars for safe footing.
Hexagonal cross bars for neat appearance.

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(We are building fighting ships now)

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